7 Conceptual Site Models for Site Subareas

This section presents conceptual site models for each of the defined Site subareas. For each subarea, the conceptual site model is described as follows: contaminants of concern (COCs) and their historical source(s), nature and extent of contamination, contaminant fate and transport, environmental exposure pathways and receptors, and, based on the collective information, subarea-specific conclusions that will be brought forward into the FS. The results from the 2011-2013 interim action conducted within the Caustic Plume and Bunker C Tank subareas are not included in this RI. As such, the conceptual site models for those two subareas represent pre-interim action conditions. Data used to characterize nature and extent of COCs for each subarea are presented in tables and figures at the end of this section. The current RI data are presented in the data tables, but pre-RI data for constituents that are not COCs are not presented in this section in order to improve usability and to reduce clutter in the tables; the reader is referred to the original pre-RI documents for tabulations of those data, summarized in Section 6.

Because of the large number of tables and figures in this section, the Section 7 table and figure numbering matches the subsection number (e.g., Tables 7-1A, 7-1B, etc. and Figures 7-1A, 7-1B, etc. correspond to Section 7.1). The data are displayed to differentiate data collected during pre-RI investigations versus data collected for the current RI under Agreed Order No. 6834. For soil and soil vapor chemistry data tables, each soil sample is designated as pre-RI or RI in the column header, and the soil and soil vapor samples are ordered alphabetically, not by date. For the groundwater chemistry data tables, data collected over time from a well are grouped together, and each groundwater sample is designated as pre-RI or RI in the column header. On the figures, explorations from which data were collected for the current RI are displayed with symbols circled in blue. The first table in the series of tables, Table 7-X, provides notes and definitions used on all of the Section 7 tables (so notes are not repeated on each table).

The soil chemistry data tables in this section present data that are considered representative of current Site conditions based on available information. Samples representing soils that were excavated do not represent current Site conditions and, therefore, are not presented in the soil chemistry data tables. Pre-RI data from monitoring wells that are no longer accessible are presented in the groundwater chemistry tables.

Because of the proximity and overlap of the Site subareas and their COCs, some data are presented for more than one subarea (tables and figures) for the purpose of defining the extent of COCs.

7.1 Caustic Plume Subarea

7.1.1 Contaminants of Concern and Source

Mercury and pH are COCs for the Caustic Plume subarea. The sources of mercury are historical releases of mercury-containing process wastes and wastewaters from the Chlor-Alkali plant, which used a mercury cell electrolysis process to generate chlorine gas,

sodium hydroxide (caustic), and hydrogen gas. Section 2.1.1 describes mercury-containing waste products from the mercury cell process, any or all of which may have released mercury to soil and groundwater in the subarea. Based on the data described below, releases of mercury appear to have occurred around the east and south perimeter of the Cell Building, and in the areas of process tanks, piping, and filtration facilities west and northwest of the Cell Building.

In addition, releases of caustic not containing mercury also appear to have occurred where the caustic product was loaded to truck and rail car. Historical information indicates that there was a truck loading area just southwest of the chlorine tanks. The rail car loading area was located adjacent to the two chlorate tanks on the rail spur closest to the chlorine tanks (noted on Figure 7-1A). Based on the distribution of mercury and pH in groundwater discussed below, it is apparent that the source areas for the caustic and the mercury are separate, but overlapping.

The water table is typically present at depths ranging from about 2 to 4 feet below grade within the area of former Chlor-Alkali plant facility near the Cell Building; the water table gradually becomes deeper in the downgradient directions to the west, southwest, and north, with water table depths reaching 6 to 9 feet below grade along the Bellingham Bay and Log Pond shorelines.

7.1.2 Nature and Extent of Contamination

7.1.2.1 Soil

Mercury soil concentrations above a 24 mg/kg unrestricted soil screening level based on direct contact occur on the east and southeast edges of the Cell Building, and west and northwest of it where Chlor-Alkali plant process equipment and tanks were located. Mercury soil concentrations above the most stringent soil screening level of 0.1 mg/kg (based on protection of groundwater to a 0.059 µg/L mercury screening level) are widespread throughout the subarea.

During the interim action pre-design investigation, visible elemental mercury was encountered within the footprint of the former Caustic Filter House and Mercury Recovery Unit, facilities where mercury was removed from the sodium hydroxide (caustic) product and process wastewaters. Visible occurrences of elemental mercury had not been reported previously at the Site, but, as the volatile form of mercury, its presence is consistent with elevated soil vapor mercury concentrations measured in this subarea; it is also a source for elevated groundwater mercury concentrations in the subarea (groundwater and soil vapor data described subsequently).

Tables 7-1A and 7-1B present the collective pre-RI and RI soil chemistry data for the Caustic Plume subarea. Table 7-1A presents the soil mercury data (including total mercury, mercury speciation, and TCLP mercury), while Table 7-1B presents soil data for constituents other than mercury. This is done to improve the readability of the tables, given the large number of soil samples with only mercury data.

Figure 7-1A depicts mercury concentrations in soil across the subarea; however, because of the data density within the inferred mercury source area, Figure 7-1B is a zoomed-in view of soil mercury data for that portion of the subarea. On Figures 7-1A and 7-1B, the exploration symbols are color coded based on detected soil mercury concentrations:

green for concentrations below 0.1 mg/kg; blue for concentrations between 0.1 and 24 mg/kg; brown for concentrations exceeding 24 mg/kg. If an exploration has multiple soil samples with concentrations above and below one of the concentration thresholds, the symbol color for the higher-concentration sample is displayed. On the figures, the sample depth interval and mercury concentration text is also color coded: black for concentrations below 0.1 mg/kg; blue for concentrations between 0.1 and 24 mg/kg; brown for concentrations exceeding 24 mg/kg. The figures present soil mercury concentration contours for 24 and 1,050 mg/kg[9], based on the sample with the highest detected concentration for each exploration. Locations of pre-RI soil removal actions are also presented for reference.

Figures 7-1C and 7-1D are subsurface cross sections CP1-CP1' and CP2-CP2' aligned across the Caustic Plume subarea. The cross section locations are shown on Figure 7-1E. Cross section CP1-CP1' extends from the Chlor-Alkali plant facility on the southeast to Bellingham Bay on the northwest. Cross section CP2-CP2' extends from the just west of the former Chlor-Alkali plant facility on the south through the Confined Nearshore Fill/Chemfix subarea to the Log Pond on the north. The cross sections depict the subsurface depth distribution of the Fill Unit, Tidal Flat Aquitard, and Lower Sand Unit, and present soil mercury concentrations measured in explorations along the section. Soil pH was also measured in the field during the RI drilling program, largely to assist with placement of monitoring well screens, and these data are also displayed on the two cross sections. Fall 2009 groundwater pH and dissolved mercury concentrations are also depicted, and those data are discussed in the following subsection.

The nature and extent of mercury concentrations in subarea soils is described below, first for the area of the Mercury Cell Building and then for the area of Chlor-Alkali Plant infrastructure generally west of the Cell Building.

Soils at and around Mercury Cell Building

Soil samples collected following the completion of pre-RI soil removals adjacent to the Cell Building (cleanup on the south and east sides in 1993, and sewer line excavation on the west side in 2000), indicate that soil mercury concentrations above 24 mg/kg remain around the building. None of the detected soil mercury concentrations exceed the 1,050 mg/kg soil screening level based on industrial direct contact.

Following GP's 1993 removal of higher concentration soils along the east and south walls of the Cell Building (up to 5,200 mg/kg), soil mercury concentrations in the unsaturated soil immediately above the water table range from non-detect to 65 mg/kg (Figure 7-1A). At locations with data from more than one depth, the soil mercury concentrations exceeding 24 mg/kg are vertically bound to depths less than 1.5 foot (borings HA-1 and HA-7). At boring STB-17 farther east of the Cell Building, mercury was detected at concentrations below 1 mg/kg to a depth of 5 feet, and at 37 mg/kg in the 7.5- to 9-foot sample. At boring STB-18, south of STB-17, 85 mg/kg soil mercury was detected in the upper 1.5 feet of soil, with concentrations below 1 mg/kg in the two samples collected below 3.5 feet (Figure 7-1A). With the exception of the STB-17 location, soil mercury concentrations above 24 mg/kg around the east and south sides of the Cell Building appear to be limited to the upper 1 foot of soil.

[9] Soil screening levels based on direct contact under unrestricted and industrial land uses, respectively.

Beneath the concrete floor of the Cell Building itself, soil mercury concentrations range from 2.5 to 12 mg/kg in five samples (Figure 7-1A). Soil vapor mercury concentrations measured at two locations beneath the Cell Building floor slab were below the unrestricted screening level (described below) are consistent with the low measured soil concentrations beneath the building. Detected soil mercury concentrations just north the Cell Building are below 2.5 mg/kg (borings STB-07, STB-20, and EMW-28D on Figure 7-1A).

Soils West of Mercury Cell Building

The highest soil mercury concentrations in the subarea are located within the area of former Chlor-Alkali Plant infrastructure, generally west of the Mercury Cell Building, as described below.

VISIBLE ELEMENTAL MERCURY AT CAUSTIC FILTER HOUSE AND MERCURY RECOVERY UNIT

Two locations containing visible elemental mercury in subsurface soil are documented west of the Cell Building – one beneath the former Caustic Filter House and one beneath the former Mercury Recovery Unit, as illustrated on Figure 7-1B. The elemental mercury was observed at a similar depth range (roughly 4 to 10 feet, beneath the water table) in both locations. Note that the current surface grade in this area, from which the soil sample depths are measured, is in the range of 0.5 to 2 feet above the historical grade that existed when the Chlor-Alkali Plant was operating and when surface releases presumably occurred. Beneath current grade is typically 4 to 8 inches of asphalt over 0 to 16 inches of base course gravel placed when GP decommissioned the Chlor-Alkali Plant and re-paved the area in 2000.

Between the pre-design and subsequent remedial design data collection for the interim action, a detailed distribution of soil mercury concentrations within and around the visible mercury occurrences was obtained by completion of eight soil borings at the Caustic Filter House and eleven soil borings at the Mercury Recovery Unit. The data for each location are as follows:

Caustic Filter House

At the former Caustic Filter House, droplets of elemental mercury were visible in soil from borings CP-MW15 (4- to 8-foot depth interval) and CP-DS5 (6- to 12-foot interval). At CP-MW15, the mercury was observed beneath a 3.5-foot concrete foundation. For soil samples containing visible elemental mercury, the detected soil mercury concentrations ranged from 6,980 to 102,500 mg/kg[10]. TCLP-leachable mercury concentrations in the samples containing visible mercury were above the 200 µg/L (0.2 mg/L) toxicity characteristic criterion (for federal hazardous waste designation), ranging from 212 to 1,820 µg/L (Table 7-1A).

[10] Triplicate laboratory analyses were conducted for soil samples containing visible elemental mercury (three aliquots from same jar) to assess variability in associated soil mercury concentrations. Total mercury concentrations in the triplicate samples ranged from 5,090 to 38,700 mg/kg (Table 7-1A), with the relative percent differences (RPD) between lowest and highest triplicate sample results for each sample ranging from 3 to 78 percent and an average of 36 percent. The concentrations presented in the text are the average of the triplicate analyses, providing the best representation of the sample concentration.

Visible elemental mercury is not present throughout the footprint of the former Caustic Filter House. Soil samples collected from borings CP-DS6, CP-DS7, and CP-DS8, within the former structure's footprint, did not encounter visible elemental mercury, and had correspondingly much lower soil mercury concentrations (total mercury up to 114 mg/kg at CP-DS6, up to 161 mg/kg at CP-DS7, and up to 862 mg/kg at CP-DS8 (Figure 7-1B).

Soil samples collected from borings advanced around the former structure's perimeter (CP-SB18, CP-SB19, and CP-SB20) also did not encounter visible elemental mercury, and had lower soil mercury concentrations as follows:

- CP-SB18, off the northwest corner, had 191 mg/kg mercury detected in the 5- to 6-foot sample, with concentrations below 5 mg/kg in the other four shallower and deeper samples;
- CP-SB19, on the east side, had 620 mg/kg mercury in the 0.5 to 1.5-foot sample, and concentrations below 0.3 mg/kg in the four deeper samples; and
- CP-SB20, on the south side, had 64 mg/kg mercury in the 0.5 to 1.5-foot sample, and concentrations below 10 mg/kg in the four deeper samples.

Mercury Recovery Unit

At the former Mercury Recovery Unit, elemental mercury was visible in soil from borings CP-SB06/CP-SB06A (4- to 12-foot depth interval), CP-DS3 (3- to 12-foot interval), and CP-SB14 (6- to 8-foot interval). As observed at the Caustic Filter House, droplets of mercury were observed only in some of the borings completed within the footprint of the Mercury Recovery Unit.

For the soil samples containing visible elemental mercury, the detected soil mercury concentrations ranged from 5,310 to 155,000 mg/kg. TCLP-leachable mercury concentrations in the samples with visible mercury were below the 200 µg/L toxicity characteristic criterion (up to 169 µg/L; Table 7-1A).

In the initial Mercury Recovery Unit boring where mercury was visible (CP-SB06), detected soil mercury concentrations ranged from 5,310 to 38,700 mg/kg within the 5- to 8-foot depth interval where elemental mercury was visible in soil. There was very poor recovery of soil core during drilling between depths of about 11 and 19 feet, which prevented sampling of soil in that depth interval (saturated, non-cohesive sand and gravel). Mercury was detected at 3.5 mg/kg in the 19- to 20-foot soil sample. At follow-up boring CP-SB06A, immediately adjacent to CP-SB06, elemental mercury was observed in same depth range and similarly poor recovery of saturated and gravel soil was encountered in the core retrieved from the 10- to 15-foot depth interval. Adequate soil was retained from that depth interval for collection of one soil sample. The depth interval represented by the small volume of retained soil was not certain, so it was labeled as 10- to 15-feet. However, it is likely that, since soil sliding out of the core barrel bottom represents the lower portion of the core interval, the soil retained is from the upper portion of the core interval (e.g., within the 10- to 12-foot interval). The soil sample contained visible elemental mercury, and had a detected soil mercury concentration of 14,000 mg/kg.

During drilling of four borings CP-SB14 (north), CP-SB15 (east), CP-SB16 (south), and CP-SB17 (west) around the former structure's perimeter, a smaller occurrence of elemental mercury was observed only in CP-SB14 on the north edge – an approximately 4-inch layer within woody debris fill at a depth of about 6.5 feet. Soil mercury concentrations in this boring were approximately 1 mg/kg in the upper 3 feet, 1,630 mg/kg at 4 to 5 feet, 7,940 mg/kg at 6 to 7 feet (visible elemental mercury), 61.9 mg/kg at 8 to 9 feet, and 423 mg/kg at 10 to 11 feet (Figure 2). The Geoprobe drill rig hit refusal on apparent concrete at 12 feet.

Based on the presence of visible elemental mercury at CP-SB14, a fifth boring, CP-SB22, was advanced approximately 10 feet northwest of CP-SB14. No visible elemental mercury was observed in soil from CP-SB22, and soil mercury concentrations were below 24 mg/kg to a depth of 7 feet, where refusal was encountered on apparent concrete.

Likewise, at the other three perimeter borings, elemental mercury was not observed and detected soil mercury concentrations were correspondingly lower, as follows (Figure 7-1B):

- CP-SB15, on the east side, had detected mercury concentrations of 424 and 45 mg/kg between depths of 2 and 5 feet, and concentrations of 25 mg/kg or below in the three deeper samples;
- CP-SB16, on the south side, had detected mercury concentrations of 1,220 and 777 mg/kg between depths of 3 and 6 feet, and concentrations below 19 mg/kg in the three deeper samples; and
- CP-SB17, on the west side, had detected mercury concentrations of 118 and 382 mg/kg between depths of 4 and 7.5 feet, and concentrations below 29 mg/kg in the two deeper samples.

Figure 7-1B depicts the inferred areas where visible elemental mercury is present.

OTHER AREAS OF CHLOR-ALKALI PLANT INFRASTRUCTURE

Away from the visible elemental mercury occurrences, elevated soil mercury concentrations exist within the area of the Chlor-Alkali Plant infrastructure west and northwest of the Cell Building. At boring AS-02, mercury was detected at 6.9 mg/kg in unsaturated soil (0 to 2.5 feet), 94 mg/kg at and just below the water table (2.5 to 5 feet), and, farther below the water table, 19.7 mg/kg (5 to 7.5 feet) and 0.7 mg/kg (7.5 to 10 feet). Approximately 100 feet west of AS-02, beyond the western extent of the former Chlor-Alkali plant facilities, soil mercury concentrations are at or below about 7 mg/kg in borings STB-08 and STB-09 (Figures 7-1A and 7-1B).

RI borings with detected soil mercury concentrations between 24 and 1,050 mg/kg include (Figure 7-1B):

- CP-SB02, at the location of the Mercury Reclaim Storage Tanks, had detected soil mercury above 24 mg/kg only in the 9- to 10-foot sample (29 mg/kg).
- CP-SB03, drilled within the footprint of a former Wastewater Collection Tank, and within the footprint of the older Wastewater Settling Basin, had detected soil mercury above 24 mg/kg only in the 11- to 12-foot sample (560 mg/kg). We infer

that this elevated concentration corresponds to the bottom of the former Settling Basin, where elevated soil mercury is known to be present based on previously collected data (Table 7-1B). Refusal was encountered at a depth of 12 feet while drilling CP-SB03.

- At borings CP-SB07, CP-SB08, and CP-SB10, within the central portion of the investigation area, detected soil mercury concentrations above 24 mg/kg are vertically bounded to depths of 6 feet or less. This pattern also exists at boring CP-SB13, immediately west of the Cell Building, where 463 mg/kg mercury is detected in the 2- to 4-foot soil sample, and concentrations below 7 mg/kg are detected in samples to 16 feet (Figure 7-1B).
- CP-MW13, within the 72 Catch Basin excavation footprint, had mercury at 27.6 mg/kg in the 1- to 2-foot sample, and higher concentrations in the 8- to 9-foot sample (87.5 mg/kg) and 12- to 14-foot sample (42.4 mg/kg), with a lower concentration again (4.7 mg/kg) in the 15- to 16-foot sample.

The following new borings had detected soil mercury concentrations below 24 mg/kg (Figure 7-1B):

- CP-SB04 within the footprint of the former Surge Storage Tank;
- CP-SB05 north of the former 72 Catch Basin;
- CP-SB09 within the footprint of a Sump;
- CP-SB10 within the footprint of the former Wastewater Clarifier;
- CP-SB11 and CP-SB12 within the footprints of the former Caustic Storage Tanks;
- CP-MW14 located between the Clarifier and northern Caustic Tank; and
- CP-SB22 located north of the former Mercury Recovery Unit.

Throughout the area west of the Cell Building, extensive concrete exists in the upper few feet of the subsurface, with thicknesses to about 3 feet, representing slabs/foundations of structures and tanks from the former Chlor-Alkali Plant. Demolition and handling of the extensive buried concrete would create additional effort if soil removal is considered as a component of a cleanup remedy for this area.

72 CATCH BASIN

Prior to the RI, very high soil mercury concentrations were detected within the area of the former 72 Catch Basin. In 1993, soils from numerous borings (BT- series; Figure 7-1B) were sampled and analyzed in this area, and shallow soils were reportedly removed in preparation for construction of GP's newest mercury recovery (Remerc) facility (ENSR, 1993). Based on the available information, it appears that higher-concentration soils around and beneath the excavation area were not fully removed. The data are tabulated in Table 7-1A and are summarized as follows:

- Within the excavation footprint and below the inferred excavation depth, soil mercury detections exceeding 24 mg/kg extend to a maximum depth of 11.5 feet,

and are vertically bounded by samples in the depth range of 13 to 17 feet (bounded at 7 feet at boring BT-VII). The maximum concentration (33,000 mg/kg) was detected in the 7.5- to 9-foot interval from boring STB-11. Despite the localized very high soil mercury concentrations, there is no documentation that visible mercury was present. RI boring CP-MW13, drilled adjacent to STB-11, did not confirm soil mercury concentrations nearly that high, although the highest soil mercury detected at CP-MW13 (87.5 mg/kg at 8 to 9 feet) is in the same depth range. Two borings (BT-V and BT-VIII) within the excavation area have detected soil mercury concentrations below 4 mg/kg.

- Mercury soil concentrations exceeding 24 mg/kg occur in the three borings (BT-X, BT-XI, and BT-XII) located just north of the excavation area:
    - Just north of the excavation's northwest corner (boring BT-X), concentrations exceeding 24 mg/kg are vertically bounded to the upper 5 feet, with concentrations below 9 mg/kg in underlying saturated soils to a depth of 16.5 feet.
    - At boring BT-XI located north of the excavation, soil mercury concentrations above 24 mg/kg were detected in four samples spanning a depth range of 2.5 to 11.5 feet, with concentrations (2,500 and 12,000 mg/kg) above the 1,050 mg/kg industrial soil screening level between depths of 5 and 9 feet. Visible mercury was not reported in this area.
    - RI boring CP-SB05 bounds the northern extent of soil mercury above 1,050 mg/kg at the former 72 Catch Basin (Figure 7-1B).
    - Near the northeast corner of the excavation, detected soil mercury concentrations in boring BT-XII were 6.2 mg/kg in the 5- to 5.5-foot sample and 200 mg/kg in the 5.5- to 6-foot sample, which is not vertically bounded below.
- Near the southwest corner of the excavation area, detected soil mercury (310 mg/kg) above 24 mg/kg at boring BT-IX is limited to the 5- to 6.5-foot-depth interval, with concentrations below 24 mg/kg above and below it.
- South of the excavation area, detected soil mercury concentrations above 24 mg/kg extend to a depth of 6 feet at boring AS-03, and are not vertically bounded below.
- Farther west, southwest, and south of the excavation area, soil mercury concentrations are below 24 mg/kg at borings STB-10, CP-MW04, and CP-MW06. Notably, soil mercury data were collected to a depth of 39 feet (into the Lower Sand Unit) at CP-MW04, and concentrations are below 1 mg/kg within the Tidal Flat Aquitard and Lower Sand Unit. The vertical distribution of soil mercury in this boring, and adjacent borings, are depicted on north-south-trending cross section CP-2 - CP-2' (Figure 7-1D).

The soil data document that the 72 Catch Basin area is a mercury "hot spot", which is a probable source for elevated mercury concentrations in groundwater and soil vapor (described below). TCLP mercury concentrations in samples of soil from the 72 Catch

Basin area, including a sample containing 12,000 mg/kg total mercury, are below the 200 µg/L toxicity characteristic (Table 7-1A), indicating the soils would not designate as characteristic dangerous waste if excavated.

Within Bellingham Shipping Terminal

Within the Bellingham Shipping Terminal farther west of the former Chlor-Alkali plant, soil mercury concentrations are below 1 mg/kg, with most below 0.1 mg/kg (Figure 7-1A).

7.1.2.2 Groundwater in the Fill Unit

Table 7-1C presents the pre-RI and RI groundwater mercury data in the Caustic Plume subarea. Table 7-1D presents the pre-RI and RI groundwater data for constituents other than mercury. Figure 7-1E presents the data for groundwater dissolved mercury, pH, and ORP collected during the 2009 and Spring 2010 groundwater sampling events (dry and wet seasons). An extensive number of wells were sampled in Fall 2009 and Spring 2010 in accordance with the RI/FS Work Plan. Subsequently in December 2010, a few wells were installed and sampled as part of the interim action pre-design investigation.

On Figure 7-1E, Fill Unit wells and Lower Sand wells are displayed with different symbols. Symbols for wells with dissolved mercury concentrations exceeding a 0.059 µg/L screening level are displayed in yellow, and those below 0.0.059 µg/L in green. Based on the collective data, Figure 7-1E depicts areas of Fill Unit groundwater exceeding the 0.059 µg/L dissolved mercury and groundwater pH 8.5 screening levels. In addition, the more highly impacted areas of Fill Unit groundwater – pH above 10 and dissolved mercury above 10 µg/L – are also shown. The pH 10 and 10 µg/L dissolved mercury concentration have no specific regulatory relevance, but define the "core" of the caustic plume (source area). The dissolved mercury and pH distributions on Figure 7-1E are interpreted based on the average measurements from the two RI groundwater sampling events.

Based on the 2009-2010 data, dissolved mercury concentrations in Fill Unit groundwater above the 0.059 µg/L groundwater screening level occur southwest of the former Chlor-Alkali plant facilities where, based on the soil mercury data, mercury releases occurred, and extend to the Bellingham Bay shoreline on the west, along the CP-MWB1, 2, 3 transect (down the cross section CP1-CP1' alignment). At shoreline well CP-MWB3, the detected dissolved mercury concentrations were 0.306 and 0.0479 µg/L in the two sampling events (average 0.18 µg/L) (Figure 7-1E). To the north, groundwater with dissolved mercury concentrations above 0.059 µg/L also extends north of the former plant infrastructure, but those concentrations are likely associated with other sources including the former Wastewater Settling Basin (described in Section 7.2).

Fill Unit groundwater with pH above the pH 8.5 screening level extends less far to the west, but farther to the south-southwest than the dissolved mercury. As described in Section 4.2.2, the predominant Fill Unit groundwater flow direction in this area of the Site is to the west toward Bellingham Bay; however, there are components of flow to the north toward the Log Pond and to the south-southwest toward Cornwall Avenue (refer to Figure 4-5).

Based on the distribution of mercury and pH in groundwater illustrated on Figure 7-1E, there appear to have been separate but overlapping source areas for the caustic and the

mercury. Releases of caustic in loading areas along the southwestern corner of the Chlor-Alkali plant facility would explain groundwater with highest observed pH (about 12) and moderate mercury concentrations (up to 14 µg/L) being observed at well AMW-03. Slightly to the north, at wells AMW-02 and EMW-19S generally west of the Caustic Filter House, higher dissolved mercury concentrations (about 20 to 40 µg/L) but somewhat lower groundwater pHs (10 to 11) are observed.

As stated above, soil pH was measured at numerous depths on the soil cores recovered during drilling of RI borings within the Caustic Plume subarea. Vertical profiles of soil pH measured in borings along cross sections CP1-CP1' and CP2-CP2' are presented on Figures 7-1C and 7-1D, respectively. Within the more alkaline areas of the plume, the measured soil pH was generally highest near the bottom of the Fill Unit and top of the Tidal Flat Aquitard unit; soil pH declined with depth in the Aquitard unit (e.g., see data from CP-MWA1 on Figure 7-1C, and CP-MW06 on Figure 7-1D). This suggests that the more alkaline groundwater has somewhat greater density, so moves to the bottom of the Fill Unit. During the RI, monitoring well screens in the Caustic Plume subarea were placed across zones where highest soil pH was measured.

While Fill Unit groundwater throughout most of the Site is geochemically reducing (low dissolved oxygen and low ORP), wells AMW-02, EMW-19S, and CP-MWA1 encompass the most highly reducing groundwater (average ORP less than -550 mv); groundwater at AMW-03 is somewhat less reducing (average ORP of -460 mV).

The area of Fill Unit groundwater encompassed by wells CP-MW15, AMW-02, EMW-19S, AMW-03, and CP-MWA1 is interpreted to be the "core" of the Caustic Plume – containing the highest pH, lowest ORP, and highest dissolved mercury concentrations. The highly alkaline, highly reducing geochemical conditions increase the mobility of mercury in the aquifer, in part by also liberating into solution higher concentrations of dissolved organic carbon (DOC) and sulfide, as discussed in the Attenuation/Transport Processes subsection below. These unique groundwater geochemical conditions do not occur anywhere else on the Site.

The highest dissolved mercury concentrations detected at the Site to date are present in monitoring well CP-MW15 (619 µg/L in December 2010; 232 µg/L in February 2011 samples collected for treatability testing), located within the footprint of the former Caustic Filter House, where visible elemental mercury is present in soil below the water table and highly caustic groundwater conditions exist (pH = 11.2, ORP = -376, DOC = 2,520 mg/L, sulfide = 98.9 mg/L; Table 7-1D).

Dissolved mercury concentrations were much lower at newer monitoring wells installed within the footprint of the 72 Catch Basin excavation (0.41µg/L at CP-MW13) and between the Clarifier and Caustic Tanks (1.26 µg/L at CP-MW14). Despite having only slighter higher dissolved mercury, well CP-MW14 has a stronger "caustic plume signature" (pH = 9.1, ORP = -339, DOC = 786 mg/L, sulfide = 16.1 mg/L) than does CP-MW13 (pH = 7.9, ORP = -41, DOC = 11.6 mg/L, sulfide = 0.4 mg/L) when sampled in December 2010. Note that CP-MW13 is positioned within the middle of the 72 Catch Basin area, and just downgradient of the former Mercury Recovery Unit where elemental mercury is observed, as detailed above (interim action location). While a substantial mercury source is present, the lack of caustic groundwater appears to be greatly limiting

leachability and dissolved phase mobility of the mercury in this area. Conversely, CP-MW14 has the caustic groundwater conditions to favor dissolved phase mobility, but is lacking a nearby source of mercury.

The collective groundwater data corroborate the conceptual site model that groundwater geochemical conditions – primarily in response to releases of caustic produced at the Chlor-Alkali plant – control the fate and transport of mercury in groundwater at the Site. In addition, higher dissolved mercury concentrations are generated only where caustic groundwater occurs in combination with a substantial source of mercury in soil.

Dissolved mercury within the Caustic Plume core migrates generally along the predominant groundwater flow directions to the west and southwest. Downgradient of the Caustic Plume core, dissolved mercury concentrations decrease as pH decreases and ORP increases. The natural buffering of pH and ORP downgradient of the caustic source area results in a corresponding decrease in dissolved sulfide and organic carbon, and facilitates precipitation of mercury in stable sulfide minerals (e.g., metacinnabar), thus removing it from the aqueous phase. Petrographic analyses of the mineralogy of the Fill Unit aquifer matrix (saturated soil) within the Caustic Plume subarea, and within the former Wastewater Settling Basin of the Confined Nearshore Fill/Chemfix subarea to the north, document that mercury is present only in association with sulfide minerals (petrography analysis report in Appendix D). Mercury has a strong affinity to bind with sulfide, and sulfide precipitation is a well-established method to remove mercury from wastewater, having been used historically to treat wastewater from GP's Chlor-Alkali plant on this Site (Section 2.1.1).

As stated above, the data indicate a dissolved mercury transport pathway generally to the west along the "B transect" wells, CP-MWB1, CP-MWB2, and CP-MWB3, installed for the RI (Figure 7-1E). Along this transect, dissolved mercury concentrations above the 0.059 µg/L screening level persist to well CP-MWB2 (approximately 1.1 µg/L), despite have nearly neutral groundwater pH (about 7.2). Approximately 160 feet upgradient, at well CP-MWB1, dissolved mercury concentrations are only slightly higher (average 1.5 µg/L) but groundwater is considerably more alkaline (average pH of 9.6).

To the south and southwest, alkaline groundwater pH (9.0) extends to well CP-MW09 on the north side of Cornwall Avenue. Despite the relatively high pH, the dissolved mercury concentration is 0.16 µg/L. Groundwater flows toward the south-southwest in this area, and the City of Bellingham's storm drain pipe is positioned below the water table in the area of CP-MW08 and CP-MW09 (Figure 7-1E). To assess whether permeable backfill around the storm drain may be acting as a preferential pathway for mercury-impacted groundwater, new monitoring well CP-MW12 was installed within the storm drain pipe backfill at the western terminus of Cornwall Avenue in April 2010, after notifying Ecology (Aspect, 2010b) and receiving their approval. At CP-MW12, we measured near-neutral groundwater pH (7.3) and background-level dissolved mercury (0.00034 µg/L) (Figure 7-1E), indicating the pipe alignment is not acting as a preferential conduit for contaminant transport. As stated above, it appears likely that there have been releases of caustic (without mercury) near the southwest corner of the former Chlor-Alkali plant, creating a source of higher pH groundwater on the south end of the plume which facilitates mercury transport toward the southwest.

To the north, dissolved mercury concentrations above 1 µg/L extend to between the locations of wells EMW-14S and CP-MW03 (Figure 7-1E). At EMW-14S, dissolved mercury was detected in the dry and wet season sampling events at concentrations of approximately 2.5 and 5 µg/L, with corresponding groundwater pHs of 8.5 and 9.2. At well CP-MW03, approximately 140 feet further north of EMW-14S, detected dissolved mercury concentrations were 0.76 and 0.39 µg/L, with measured near-neutral groundwater pHs (7.2 and 7.3), in the two sampling events. Wells EMW-14S and CP-MW03 are both located within the footprint of the former Wastewater Settling Basin, and are screened across saturated soil with very high soil mercury concentrations (160 mg/kg at EMW-14S and 1,050 mg/kg at CP-MW03; see Figure 7-1D). Approximately 80 feet southwest of EMW-14S, well EMW-2S, located outside the former Settling Basin, has low soil mercury concentrations within its screened interval (2 to 5 mg/kg) and slightly lower groundwater pH and dissolved mercury than EMW-14S (Figure 7-1D). Groundwater chemistry data for well Law-1, located further north, next to the Log Pond shoreline, are discussed as part of the Confined Nearshore Fill/Chemfix subarea (Section 7.2).

The data indicate that the Caustic Plume's eastern edge is west of the Cell Building. Near-neutral groundwater pH and background levels of dissolved mercury concentrations are measured at Fill Unit wells CP-MW11, EMW-4S, and EMW-1S located east of the Cell Building (Figure 7-1E).

Temporal Trends in Fill Unit Dissolved Mercury Concentrations

Data from Caustic Plume subarea monitoring wells EMW-1S, EMW-2S, EMW-14S, and EMW-19S, monitored from 1993 to present (17 years), indicate variable long-term trends for dissolved mercury concentrations for the subarea as a whole, but with a clear concentration reduction within the core of the plume. The observed dissolved mercury concentration trends for these four wells are summarized as follows, and are illustrated on Figure 7-1F:

- EMW-1S, south of the Cell Building, increased from non-detect (<0.1 µg/L) in 1993 to 3.9 µg/L in 2003, and declined to an average of 0.49 µg/L in 2009-2010;
- EMW-2S, north of the 72 Catch Basin area, increased from an average of 0.38 µg/L in 1993 to an average of 2.0 µg/L in 2009-2010;
- EMW-14S, within the former Wastewater Settling Basin, increased from 0.96 µg/L in 1993 to an average of 3.8 µg/L in 2009-2010; and
- EMW-19S, within the Caustic Plume core, declined from 460 µg/L in 1993 to an average of about 24 µg/L in 2009-2010.

7.1.2.3 Groundwater in the Lower Sand Unit

Multiple lines of evidence indicate that the Lower Sand Unit has not been impacted by Caustic Plume contamination in the overlying Fill Unit. Most importantly, dissolved mercury concentrations in Lower Sand Unit wells EMW-28D, CP-MW04, and CP-MW05 are below 0.02 µg/L, and their groundwater pH is near neutral (range of 6.8 to 7.5). These data are also consistent with groundwater chemistry at Lower Sand Unit well EMW-29D located farther northeast, within the Confined Nearshore Fill/Chemix subarea. Likewise, dissolved mercury was not detected (0.2 µg/L detection limit) in the three

Lower Sand Unit wells EMW-28D, EMW-29D, and EM-30D when sampled in 1993 (ENSR, 1994a).

Soil mercury data from borings EMW-28D, CP-MW04, and CP-MW05, advanced through the Tidal Flat Aquitard into the Lower Sand Unit, indicate soil mercury concentrations below 0.4 mg/kg in the Lower Sand Unit. Where soil pH is elevated in the Fill Unit, it declines quickly within the upper couple of feet of the Tidal Flat Aquitard, as described above.

Finally, the Site water level data demonstrate that a head difference of several feet is maintained between the aquifers, providing physical evidence for the competence of the Tidal Flat Aquitard unit in limiting downward groundwater flow between the aquifer units (Section 4.2.2).

7.1.2.4 Soil Vapor

Mercury in the elemental form (Hg^0) has a much higher vapor pressure (volatility) than the divalent form (Hg^{+2}), but relatively low solubility in water. Divalent mercury, primarily present at the Site as mercury-sulfide and dissolved organic matter (DOM) complexes, has very low volatility but may become soluble, particularly in caustic groundwater.

As part of the RI, sampling and analysis for mercury in soil vapor (soil gas) was conducted at the following locations within and adjacent to the Caustic Plume to supplement the single vapor sample (AS-03) collected during the 2003 RI Addendum (Figure 7-1G):

- During the Fall 2009 data collection program, ten soil vapor samples were collected from shallow soil vapor probes installed within a few feet of new Fill Unit monitoring wells where mercury soil and groundwater data were also collected; the vapor probe identification numbers were the same as the corresponding monitoring well but with a "V" suffix added.
- As part of the Spring 2010 supplemental investigation, vapor sampling and analysis was conducted at four additional locations (CP-VP01, CP-VP02, CP-VP03, and CP-VP04) not specifically paired to wells.
- In February 2011, vapor sampling and analysis was conducted at five shallow soil vapor probes (CP-VP05, CP-VP07, CP-VP08, CP-VP09, and CP-VP10) to further refine the extent of elevated mercury soil vapor within the mercury source area for the Caustic Plume subarea[11].
- In October 2011, vapor sampling and analysis was conducted at three locations: two inside the Mercury Cell Building (CP-VP11 and CP-VP12), and one (CP-VP14) between the Cell Building and the Caustic Filter House. An additional probe, location CP-VP13, planned outside the northwest corner of the Cell Building, hit refusal on several feet of subsurface concrete and could not be completed.

[11] The sorbent trap sample collected at probe CP-VP06 contained water, from the shallow water table, and could not be analyzed.

The gas probes were advanced through and sealed into pavement. The CP-VP01 gas probe was advanced through the concrete floor slab in the southeastern corner of a maintenance shop operated by the Port of Bellingham (location in building as close as practical to known high vapor concentration sample locations AS-03 and CP-MW06V). The CP-VP11 and CP-VP12 probes were advanced through the concrete floor slab of the Mercury Cell Building. Table 7-1E presents the pre-RI and RI soil vapor chemistry data for the Caustic Plume subarea.

Figure 7-1G depicts the pre-RI and RI mercury soil vapor sample locations and data. On the figure, the symbols for sample locations with mercury vapor concentrations above the 1.4 $\mu g/m^3$ unrestricted screening level are displayed in yellow; symbols for sample locations with concentrations below the unrestricted screening level are displayed in green.

Three of the 24 vapor sample locations had detected mercury soil vapor concentrations exceeding the 1.4 $\mu g/m^3$ unrestricted screening level; the detections at the three locations (720 $\mu g/m^3$ at AS-03, 340 $\mu g/m^3$ at CP-MW06V, and 4.58 $\mu g/m^3$ at CP-VP14) also exceed the 3.0 $\mu g/m^3$ industrial air screening level.

However, we believe the low soil vapor mercury concentrations (below 0.03 $\mu g/m^3$) measured at five locations in February 2011 are biased low because of high water table conditions, which limits vapor generation and transport, as described in Aspect (2011b). Most notably, only 0.022 $\mu g/m^3$ soil vapor mercury was measured in sample CP-VP05, collected at the former Caustic Filter House where visible elemental mercury is present (Figure 7-1G). The February 2011 vapor sampling represented wet season conditions when the water table is relatively high (but still rising seasonally). The groundwater level measured in well CP-MW15, located within the footprint of the Caustic Filter House, indicates that the water table was up to the bottom of the 3-foot-thick concrete foundation of the former structure when vapor sample CP-VP05 was collected. In other words, there is effectively no unsaturated (vadose) zone beneath the former Caustic Filter House during the wet season; given the large number of thick concrete foundations throughout this area, this is likely locally true throughout the area.

We infer that the mercury source at the Caustic Filter House is contributing dissolved divalent mercury to caustic groundwater year-round (e.g., 619 and 232 µg/L at CP-MW15 in December 2010 and February 2011, respectively; Table 7-1C), but vapor generation and transport from the visible elemental mercury is greatly limited when the water table is high enough to saturate the source material. Elemental mercury's relatively low solubility in water inhibits the formation of mercury vapor under saturated conditions; conversely, divalent mercury may dissolve in caustic water, but does not have a high enough vapor pressure to generate significant mercury vapor.

Therefore, despite the lack of elevated soil vapor mercury concentrations detected at CP-VP05 in February 2011, the elemental mercury observed there is considered a source of mercury to soil vapor, but only when the water table is low enough to expose it to unsaturated soil conditions (vadose zone). This is supported by the fact that, during the February 2011 drilling of boring CP-SB19, immediately east of CP-VP05 (See Figure 7-1B), 43 $\mu g/m^3$ mercury was detected, using field screening methods, in air at the top of the borehole once the asphalt pavement was penetrated; the field-measured concentration

declined to below 1 μg/m^3 as drilling advanced below 2 feet (into groundwater). Furthermore, the October 2011 vapor mercury data, collected when the water table was a couple feet lower, indicate a soil vapor mercury concentration gradient away from the Caustic Filter House (4.58 μg/m^3 at CP-VP14, 0.23 μg/m^3 at CP-VP12, and 0.06 μg/m^3 at CP-VP11; Figure 7-1G).

Within the footprint of the Mercury Recovery Unit, the shallowest observed elemental mercury was approximately at the depth of the water table during drilling of borings CP-SB06 and CP-SB06A. During drilling of CP-SB06A, approximately 50 μg/m^3 mercury was detected by field screening methods in air at the top of the borehole during the start of drilling. A soil vapor sample was not collected at the former Mercury Recovery Unit in February 2011 since it was presupposed that soil vapor mercury concentrations would be high there, and the samples were better used to define concentrations away from it. Previously collected soil vapor mercury concentrations decline with increasing distance southwest from the former Mercury Recovery Unit: 720 μg/m^3 at AS-03 (May 2003 sample) and 340 μg/m^3 at CP-MW06V (September 2009 sample; Table 7-1E).

In short, we infer that, during the dry season, the water table drops sufficiently at the Caustic Filter House and Mercury Recovery Unit to unsaturate soils within which elemental mercury is present. Consequently, the elemental mercury at both locations is a dry season source of mercury to soil vapor in the vadose zone.

Mercury concentrations in both soil vapor samples collected beneath the floor of the Mercury Cell Building, measured during low-water-table conditions (October 2011) are below the 1.4 μg/m^3 unrestricted screening level (CP-VP11 and CP-VP12; Figure 7-1G). Note that there is a void space of a foot or less beneath the Cell Building floor, which was recorded in ENSR (1994a) and observed during the October 2011 soil vapor sampling. The October 2011 mercury vapor field screening measurements in the void space were considerably lower than field screening measurements for ambient air within the Cell Building at the same time. These data are consistent with the relatively low soil mercury concentrations (less than 12 mg/kg) detected in the five samples of soil collected beneath the slab of the Mercury Cell Building "at locations where the potential for mercury migration through the floor into underlying soils was high" (ENSR, 1994). Following the 2000 Chlor-Alkali plant decommissioning (removal of process equipment etc.), GP poured a new concrete slab across the Cell Building floor, which should further reduce intrusion of potential subsurface vapors into the building (Foster Wheeler, 2000); i.e., mercury ambient air concentrations detected within the Cell Building are interpreted to be from the building interior surfaces, not from beneath it. The collective data indicate that a substantial source of elemental mercury is not present beneath the Cell Building floor.

Notably, the 0.1 μg/m^3 mercury soil vapor concentration detected beneath the Port's maintenance building (sample CP-VP01) is an order of magnitude below the industrial air screening level, 250 times below the 25 μg/m^3 American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV), and 500 times below the 50 μg/m^3 National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL).

Detected soil vapor mercury concentrations exceeding the unrestricted screening level occur in association with elemental mercury occurrences known to exist west of the Cell

Building. The extents of vapor exceedances around the elemental mercury occurrences are generally bounded by surrounding lower concentration samples (inferred extents displayed on Figure 7-1G).

The southern extent of vapor mercury exceedance may be slightly overstated, as a result of uncertainty in the analytical result from the CP-VP04 sample. For each soil vapor sampling location, Frontier Geosciences collected and analyzed field duplicate samples, using pairs of sorbent traps run in parallel. Duplicate results agreed well for the samples except CP-VP04, from which total mercury was detected at 1.54 and 0.24 $\mu g/m^3$ in the duplicate samples (relative percent difference [RPD] of 73percent). According to Frontier, the most likely explanation for the discrepancy is entrainment of mercury-containing soil particulate in the sorbent trap with higher concentrations; the EPA Method 30B methodology does not include use of particulate filters (a copy of Frontier's report is provided in Appendix E for reference). While the 0.24 $\mu g/m^3$ result may be more reliable, this cannot be confirmed, so the average of the two duplicate results (0.89 $\mu g/m^3$) is used as the best estimate concentration value at CP-VP04 for the purposes of the RI.

7.1.2.5 Indoor Ambient Air within Mercury Cell Building

Total mercury concentrations above 70 mg/kg were detected in interior structural building materials within the Mercury Cell Building during 2011-2012 sampling and analysis conducted to designate the materials for disposal after building demolition planned as part of the interim action. The mercury on interior building surfaces was presumably transported in vapor phase from elemental mercury handled within the building. As such, residual mercury on the interior building surfaces is expected to remain volatile.

During the interim action pre-design investigation, a mercury concentration of 1.28 $\mu g/m^3$ was detected in the 24-hour sample of ambient air collected within the interior of the Mercury Cell Building (CP-AA01; Figure 7-1G). The ambient air sampling and analysis was conducted using the same protocols as applied for the soil vapor samples, except the sample was drawn from a height of approximately 4 feet above grade within the building instead of from a subsurface vapor probe. The 1.28 $\mu g/m^3$ mercury indoor air concentration is nearly 9 times above the 0.14 $\mu g/m^3$ standard Method B air cleanup level for unrestricted [residential] occupation, and 4 times above the 0.3 $\mu g/m^3$ standard Method C air cleanup level for industrial workers; however, it is well below the 25 $\mu g/m^3$ ACGIH TLV and the 50 $\mu g/m^3$ NIOSH REL for workers.

For comparative purposes, a mercury concentration of 0.003 $\mu g/m^3$ was detected in the sample of area-background outdoor air (BG-AA01; Figure 7-1G and Table 7-1E) collected over a time period of approximately 24 hours. The data indicate that air mercury concentrations within the Mercury Cell Building are roughly 400 times higher than background ambient air outside the building. The collective information indicates that the interior building materials are a source of mercury detected in indoor air within the building (as opposed to sub-slab soil as described above).

7.1.3 Contaminant Fate and Transport

7.1.3.1 Source Control

Sources of mercury remain within the Caustic Plume subarea. GP's decommissioning of the Chlor-Alkali plant facility in 2000 removed a substantial quantity of materials, equipment, and debris that likely served as historical sources of mercury. However, subsequent sampling and analysis confirms that the building materials remaining within the Mercury Cell Building are a residual source of mercury on the Site, including selected materials that designate as characteristic dangerous waste based on mercury leachability.

GP removed mercury-contaminated soils from selected locations within the Caustic Plume subarea between 1993 and 2002. The primary removal actions involved the 1993 excavation and off-Site disposal of shallow soils from the 72 Catch Basin location, and along the south and east walls of the Cell Building where high soil mercury concentrations had been identified (ENSR, 1993). In 1998, a spill of mercury-containing sludge and associated surficial soil was removed from the area of the Wastewater Settling Basin (previously decommissioned and filled). Between 1999 and 2002, GP also performed a series of independent soil removals in conjunction with decommissioning of the former Chlor-Alkali plant area and various infrastructure improvements. Following the independent removal actions, elevated soil mercury concentrations remain across areas of the former Chlor-Alkali plant facility, particularly west of the Cell building, which, if exposed to caustic geochemical conditions, represent a source of leachable mercury to groundwater.

In addition, free-phase elemental mercury is present in subsurface soils at the former Caustic Filter House and Mercury Recovery Unit. When the water table seasonally drops below the top of the elemental mercury, it serves as source for elevated mercury concentrations in soil vapor; when saturated, it is a source of mercury in groundwater. The elemental mercury is targeted for removal as part of the interim action.

7.1.3.2 Attenuation/Transport Processes

This subsection briefly summarizes the geochemical conditions interpreted to be controlling transport and attenuation of mercury in the Caustic Plume subarea. Appendix C provides a more detailed discussion of mercury geochemistry and environmental mobility as applicable to the subarea, and the rest of the Site.

Mercury mobility is controlled by a number of biogeochemical processes that occur under varying aquifer conditions including groundwater pH, ORP (aka redox), general chemistry (e.g., concentrations of anions, cations, and organic carbon), and the nature and abundance of solid-phase mineral components. The RI data provide evidence of processes that enhance and/or limit the mobility of mercury including complexation, mineral precipitation, adsorption, and volatilization.

In general, dissolved mercury combines with other chemical constituents of natural water systems to form a variety of complex ions and solid phase compounds. The prevalent form of mercury - divalent mercury (Hg[II]) - in solution forms stable complexes with sulfide and natural organic matter (NOM) if they are present. Dissolved sulfide complexes are predominant under reducing conditions even at low sulfide concentrations, while complexes with NOM are stable under oxidizing conditions or in the absence of

sulfide. In groundwater with elevated dissolved organic carbon (DOC), mercury-NOM complexes are predominant.

Mercury mobility is enhanced in the Fill Unit aquifer by caustic pH and reducing ORP. Consequently, the highest dissolved-phase mercury occurs within the area of most alkaline and reducing groundwater, which is referred to as the core of the Caustic Plume subarea. Within the highly reducing and caustic pH conditions, mercury is thermodynamically stable as negatively charged dissolved sulfide complexes. In general, mineral surfaces in alkaline pH groundwaters (low concentrations of H+) have a net negative charge, as the mineral surfaces are occupied by more OH- ions than H+ ions. The mineral surface (aquifer matrix) therefore tends to repel the negatively charged mercury complexes in solution, limiting adsorption and maintaining higher dissolved-phase concentrations. Conversely, at acidic pH (high concentrations of H+), mineral surfaces are generally positively charged, and attract the negatively-charged mercury complexes in solution (reducing dissolved-phase concentrations).

Dissolved-phase mercury concentrations generally decrease as pH decreases in the Caustic Plume subarea, which may reflect both an increase in adsorption of dissolved mercury by mineral surfaces and soil organic matter, as well as precipitation of the mercury-containing sulfide minerals. Under suitable redox and pH conditions, dissolved inorganic mercury precipitates as the mercury-sulfide mineral metacinnabar, a relatively stable and insoluble mercury-sulfide (HgS) mineral, or in solid solution with other sulfides such as pyrite (FeS_2). Petrographic analyses for Fill Unit aquifer matrix (saturated soil) from within the Caustic Plume subarea, and within the Former Wastewater Settling Basin of the Confined Nearshore Fill/Chemfix subarea, document mercury present only in association with sulfide minerals (refer to Appendix D). Mercury has a strong affinity to bind with sulfide, and sulfide precipitation is a well-established method to remove mercury from wastewater, having been used historically to treat wastewater from GP's Chlor-Alkali plant on the Site (Section 2.1.1).

Downgradient of the core of the Caustic Plume, groundwater is less sulfidic, more oxidizing, and neutral to slightly acidic. These factors contribute to attenuation of dissolved mercury, as demonstrated by the dissolved mercury data. These groundwater conditions are also typical of Site groundwater conditions outside of the Caustic Plume subarea (described in subsequent subsections).

7.1.4 Exposure Pathways and Receptors

Mercury is present in Caustic Plume subarea soil, groundwater, and soil vapor at concentrations above respective screening levels. Soil and groundwater pH also exceed screening levels. Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the Caustic Plume subarea include:

- Residents or patrons contacting caustic- and/or mercury-contaminated soils and/or inhaling mercury-contaminated dust or vapors;
- Residents, patrons, and workers in buildings inhaling indoor air contaminated by the volatilization of mercury from shallow soils and/or groundwater (vapor

intrusion) or interior building surfaces within the Mercury Cell Building if not demolished and removed;

- Workers directly contacting caustic- and/or mercury-contaminated soils and groundwater (dermal contact, incidental ingestion) and/or inhaling mercury-contaminated dust or vapors during excavation or other construction-related activities;
- Aquatic ecological receptors becoming directly exposed to mercury and/or caustic pH in marine sediment or water; and
- Humans consuming aquatic biota contaminated by discharges of mercury and/or caustic pH to marine sediment and surface water.

7.1.5 RI Conclusions for Caustic Plume Subarea

Mercury and pH concentrations in soil and mercury soil vapor within areas of the Caustic Plume subarea exceed unrestricted and industrial soil screening levels. In addition, mercury concentrations and pH in groundwater exceed groundwater screening levels based on protection of the marine environment.

Mercury in soil and the former Cell Building structure represent ongoing sources for impacts to air (via vapor intrusion) and Fill Unit groundwater. The residual elemental mercury at the Caustic Filter House and Mercury Recovery Unit locations are sources for the high vapor-phase mercury concentrations measured in the portion of the former Chlor-Alkali plant west of the Cell Building. It appears there have been separate but overlapping releases of mercury and caustic within the Chlor-Alkali plant facility, creating highly alkaline and highly reducing groundwater conditions – the core of the Caustic Plume - just west of the area with highest mercury vapor concentrations. The unique geochemical conditions within the Caustic Plume core greatly enhance the environmental mobility of mercury, creating high dissolved-phase concentrations in groundwater. The alkaline, reducing groundwater conditions gradually attenuate (buffer) with downgradient distance from the caustic source area, accompanied by a corresponding decrease in dissolved mercury concentrations.

Based on the RI information, assessment of remedial alternatives for mercury and caustic pH in the Caustic Plume subarea soil, soil vapor, and groundwater is warranted in the FS.

Additional detailed information will likely be needed to design a final cleanup action for the Caustic Plume subarea. In support of this, treatability studies for chemically stabilizing high-mercury-concentration soils, and for removing dissolved phase mercury from groundwater, are underway in accordance with an Ecology-approved Work Plan (Anchor QEA and Aspect, 2011a).

7.2 Confined Nearshore Fill/Chemfix Subarea

7.2.1 Contaminants of Concern and Source

Mercury and petroleum hydrocarbons are COCs for the Confined Nearshore Fill/Chemfix (CNF) subarea. Prior to 1974, the CNF served as GP's Log Pond, a constructed lagoon on the Whatcom Waterway. Between 1965 and 1970, the Chlor-Alkali plant discharged untreated mercury-containing wastewater directly to this area. In 1970, GP constructed a

bermed earthen basin along the CNF's western edge to settle suspended solids in the Chlor-Alkali plant's wastewater, prior to its discharge to the Log Pond. In 1974, an earthen dike was constructed around a portion of the Log Pond, behind which surface sediments hydraulically dredged from the Whatcom Waterway were placed to construct a land-based log handling facility within what is now the CNF footprint. The earthen dike represents the current shoreline configuration in this area. In 1976, accumulated sludge from the Wastewater Settling Basin was removed, chemically stabilized using the Chemfix process, and placed within the southern portion of the CNF, where it is capped with geotextile and asphalt; an Ecology Order prohibits disturbance of the cap. In 1980, sludge in the settling basin was removed and landfilled, and the basin was filled with imported soil. Also at that time, Chlor-Alkali plant wastewater was routed to the ASB for treatment and discharge (Section 2.1.1).

Based on that history, there are multiple related sources for mercury within the CNF subarea. The dredge fill comprising most of the subarea contains low-level mercury as a result of the Chlor-Alkali plant discharging mercury-contaminated wastewater to the Whatcom Waterway starting in 1965. In the western portion of the CNF subarea, where wastewater was historically discharged to the Log Pond prior to 1980, mercury exists on the former sediment surface at the bottom of the dredge fill. The solids that accumulated within the former Settling Basin contained high mercury concentrations from years of wastewater discharge, and the Chemfix-stabilized sludge within the CNF likewise contains high mercury concentrations.

GP also operated its wood chip storage yard (Chip Dump) in the eastern portion of the CNF subarea. The chip dump used a large hydraulic conveyor (with associated hydraulic oil), and the pre-RI data document elevated soil TPH concentrations at the location of the former conveyor.

7.2.2 Nature and Extent of Contamination

7.2.2.1 Soil

The nature and extent of mercury and petroleum in the CNF subarea soil are described in the following subsections. Tables 7-2A and 7-2B present the pre-RI and RI soil chemistry data for the CNF subarea. Table 7-2A presents the soil mercury data (including total mercury, mercury speciation, and TCLP mercury), while Table 7-2B presents soil data for constituents other than mercury. The depth to groundwater is variable across the subarea as a result of variable surface topography (Figure 4-1) and the presence of two groundwater mounds imposed upon the generally south-to-north-sloping water table (refer to Section 4.2.2).

Figure 7-2A graphically presents the soil mercury and petroleum hydrocarbon data for the subarea. Figure 7-2B is a zoomed-in view of soil mercury data for the former Wastewater Settling Basin and Law-1 Areas within the western portion of the subarea. The explorations shown have soil mercury data, but only two explorations, near the former hydraulic chip dumper (conveyor) in the western portion of the subarea, also have soil TPH data. For explorations with mercury and petroleum data, the data are labeled by constituent in the data boxes displayed. For explorations with soil mercury data only, the mercury data are not labeled in the data boxes. This convention is explained in the figure legend also.

Mercury

Soils containing mercury concentrations above a 24 mg/kg unrestricted direct contact soil screening level occur in two portions of the CNF subarea: the western area within and around the former Wastewater Settling Basin, and within the Chemfix material. Outside of these areas, soil mercury concentrations within the dredge fill are commonly above a 0.1 mg/kg screening level based on groundwater protection, but are below 24 mg/kg and typically below 10 mg/kg.

With the exception of one anomalous data point, soil mercury concentrations below the upper couple of feet of the Tidal Flat Aquitard and in the Lower Sand Unit are at or below 0.4 mg/kg. The exception is 4.5 mg/kg soil mercury detected in the 29- to 30.5-foot sample (Lower Sand Unit) collected from boring EMW-30D during ENSR's (1994a) investigation. The soil samples above and below that sample (depths of 16 to 17.5 feet, and 34 to 35.5 feet) had no detectable mercury (below 0.1 mg/kg), and ENSR (1994a) qualified the 4.5 mg/kg detection as an anomaly.

During the RI sampling and analysis, soil mercury concentrations detected in the Lower Sand Unit at boring CP-MW05, advanced through the bottom of the former Settling Basin, were below 0.04 mg/kg (concentrations in the overlying Fill Unit at that location were as high as 375 mg/kg). Soil mercury concentrations in the former Wastewater Settling Basin, Law-1 area, and Chemfix material, within the CNF subarea, are described in greater detail in the following subsections.

FORMER WASTEWATER SETTLING BASIN

Soil mercury concentrations exceeding 24 mg/kg are present within and adjacent to the former Wastewater Settling Basin on the west side of the CNF subarea (Figure 7-2A). Elevated soil mercury concentrations remain in localized surficial soils after GP's independent cleanup of spilled sludge north of the brine sludge tanks (samples Site-1, Site-2, Site-3, and Site-8). At depth within the Basin footprint, mercury concentrations above 24 mg/kg occur to depths exceeding 15 feet (point of compliance for soil cleanup levels based on direct contact), with the highest concentrations detected in a layer of saturated silty gravel between depths of approximately 10 and 15 feet, and somewhat shallower on the Basin's northern end. Figure 7-1D, presented for the Caustic Plume subarea discussion, presents the soil mercury concentrations along a north-south cross section through the former Basin, and illustrates the high-concentration layer at depth.

Within that layer, the maximum detected mercury concentration is 1,760 mg/kg in the 8- to 10-foot sample from boring L1-MW04, located in the northern portion of the basin; soil mercury concentrations below 50 mg/kg were detected in samples immediately above and below that sample (also see Figure 7-2B). Soil pH readings were between 7 and 8 throughout the L1-MW04 soil core.

On the north end of the basin, the highest soil mercury concentration at boring L1-MW05 (108 mg/kg) was detected at more shallow depth (7- to 9-foot sample), with concentrations below 24 mg/kg in samples above and below it. Soil pH readings from the L1-MW05 soil core were generally above 9 from surface to total depth, with the highest readings (10.8 to 11.0) in the 8- to 10-foot interval where the higher soil mercury is also present (note that the L1-MW05 monitoring well, screened at 5 to 10 feet, straddles this interval).

To the south, closer to the middle of the basin, the high-concentration soil layer is somewhat deeper, with a maximum concentration of 1,050 mg/kg – equal to the industrial soil screening level – in the 13- to 15-foot sample from boring CP-MW03. Several feet away, at CP-MW05, the 12.5- to 14-foot soil sample contained 375 mg/kg mercury. The collective soil mercury data suggest that the former Basin was shallower near its northern end than in its center.

During the RI drilling, soil pH up to 9.5 was measured in the high-concentration layer; soil pH data are also depicted on Figure 7-1D. Petrographic analysis of the 375 mg/kg soil sample from CP-MW05 indicated that mercury is present as mercury sulfide mineral coatings on the aquifer matrix grains (refer to Appendix D).

TCLP Mercury Data. During the interim action pre-design investigation, the two samples of soil from the former Settling Basin containing the highest detected total mercury concentrations were submitted for analysis of leachable mercury by the TCLP analysis. Soil samples L1-MW04-8-10 (1,760 mg/kg mercury) and L1-MW05-7-9 (108 mg/kg mercury) generated TCLP mercury concentrations of 7.8 and 85.9 µg/L, respectively - both below the 200 µg/L toxicity characteristic criterion. TCLP mercury concentrations were also below the toxicity characteristic criterion in three pre-RI soil samples from within the Settling Basin footprint with total mercury concentrations ranging from 31 to 200 mg/kg (Table 7-2A).

The existing TCLP data suggest that, if soil at the base of the former Wastewater Settling Basin were excavated, it would not designate as characteristic dangerous waste.

AREA SURROUNDING WASTEWATER SETTLING BASIN, INCLUDING LAW-1 AREA

At depth outside the Settling Basin footprint, soil mercury concentrations of 39, 74, and 51 mg/kg were detected in the 11.5- to 13-foot sample from boring STB-03,the 14- to 15.5-foot sample from boring ESB-18S, and the 14- to 15-foot sample from boring L1-MW01, respectively (Figure 7-2B). These depths are near the bottom of the fill, and the higher soil mercury sample concentrations may be the result of the wastewater discharges to the original Log Pond configuration (prior to 1974 placement of the dredge fill).

Elevated groundwater mercury concentrations were detected in the Law-1 monitoring well during the 2009-2010 RI sampling (groundwater data described below), but soil sampling at and around the well has not identified an obvious source of mercury to groundwater. At the time of Law-1's drilling in 1992, soil mercury concentrations in the boring[12] were less than 1 mg/kg, suggesting there is not a localized source of soil mercury at the well location itself. Consistent data were collected from 2010 boring L1-MW01, drilled within about 5 feet of Law-1, with detected soil mercury concentrations below 4 mg/kg except in the 14- to 15-foot soil sample (51.5 mg/kg) which is at the top of the Tidal Flat Aquitard as stated above. Elevated soil pH was measured in the soil core from L1-MW01, with readings above pH 9 between depths of about 8.5 and 11 feet (soil pH readings are presented on the borings logs in Appendix A).

At boring L1-MW03, located 30 feet east of Law-1, soil mercury was detected at 3 mg/kg in the 4- to 5-foot soil sample, and below 0.4 mg/kg in the four deeper samples. Soil pH readings were between 8 and 9 throughout the L1-MW03 soil core.

[12] Boring STB-1 was completed as monitoring well Law-1 (Law Environmental, 1992).

Low soil mercury concentrations were detected in the two soil borings (L1-MW02 and L1-MW06) completed within the Salt Storage Pad area west of the 1974 Nearshore Confined Fill (Figure 7-2B). The fill in this area was placed prior to construction and operation of the Chlor-Alkali Plant. Soil mercury concentrations were below 7 mg/kg in boring L1-MW02, and soil pH readings ranged between 7.7 and 9.4 with readings above pH 9 in the depth interval of 10.5 to 14 feet. Due north of this boring, boring L1-MW06 had detected soil mercury concentrations uniformly below 0.3 mg/kg, and soil pH between 7.3 and 8.5. There is no evidence from the analytical data or the Site history that there is a mercury source in the older dredge fill comprising the Salt Storage Pad area.

In summary, the collective soil data, in relation to the groundwater data, do not identify an obvious soil mercury source contributing to localized elevated dissolved mercury concentrations in the Law-1 area. Elevated soil mercury and elevated soil pH occur in soils at depth within the footprint of the former Wastewater Settling Basin, but dissolved mercury concentrations and groundwater pH in the wells there are consistently less than those detected at downgradient Law-1/L1-MW01 and L1-MW02 locations. The data suggest that a localized occurrence of contaminated debris or fill upgradient of Law-1, but not observed during the investigation to date, is contributing localized mercury and higher pH to groundwater in the Law-1 area.

CHEMFIX

Based on its origin and the available analytical data (up to 5,800 mg/kg total mercury in a discrete sample), it is assumed that the Chemfix (chemically stabilized sludge) generally contains total mercury concentrations above the industrial soil screening level (1,050 mg/kg) as illustrated on Figure 7-2A; however, the data indicate that the Chemfix does not leach mercury to groundwater at concentrations above its screening level, nor does it generate mercury soil vapor concentrations above its screening level. The pre-RI sampling and analysis of the Chemfix-stabilized material is summarized briefly below.

In 1993, ENSR (1994a) sampled and analyzed samples of the Chemfix material from borings ESB-20S and ESB-31S. Mercury was detected at concentrations of 2,600 and 5,800 mg/kg, respectively, in samples from these borings. TCLP-leachable mercury concentrations from the two samples were 5.6 and 30 µg/L, respectively, well below the 200 µg/L (0.2 mg/L) toxicity characteristic threshold. These data indicate that the Chemfix would not designate as characteristic dangerous waste (D009) if excavated. TCLP is designed to simulate corrosive leaching in a municipal landfill environment, and overstates metals leachability in the ambient environment. Therefore, ENSR (1994a) also evaluated the Chemfix leachability using a modified TCLP leaching test that used Fill Unit groundwater from the Site (from monitoring well EMW-1S) as the leaching solution rather than the standard TCLP solution. Using this modified test, the Chemfix sample with 2,600 mg/kg total mercury had leachable mercury detected at 3.2 µg/L, roughly half that from the standard TCLP test.

In 2003, Anchor (2003b) collected a composite sample of material from four soil borings (AS-12, AS-13, AS-14, and AS-15) for mercury leachability analysis by sequential batch leaching testing (SBLT). The composite sample had a total mercury concentration of 10.2 mg/kg. The SBLT leachability testing was conducted using Site groundwater under variable pH conditions (3, 7.2, 9, and 12) as the leaching solution. The four different pH

tests were run for four days, with effluent samples collected each day for mercury analyses.

The effluent from the pH 6-7 SBLT, approximating typical Site groundwater pH within the CNF subarea, had an average leachable mercury of essentially zero (negative when corrected for influent concentrations), but it was observed to increase slightly to 0.2 µg/L over the four days. Average SBLT-leachable mercury concentrations observed in the other three pH tests (pH 3, 9, and 12; not representative of CNF groundwater conditions) were 0.1, 1.5, and 164 µg/L, respectively. The much greater mercury leachability observed at pH 12 is consistent with mercury geochemistry, as described in Section 7.1.3.

Petroleum Hydrocarbons

A 3,850 mg/kg concentration of total TPH (sum of diesel- and oil-range petroleum concentrations), above the 2,000 mg/kg unrestricted soil screening level, was detected in the 0- to 4-foot soil sample from boring CD-SB02, located next to the former hydraulic conveyor used for chip loading in the Chip Dump area. Total TPH concentrations in CD-SB02 soils decrease to 1,370 mg/kg in the 8- to 12-foot sample, and 55 mg/kg in the 12- to 16-foot sample. No soil TPH exceedances were detected at CD-SB01 located north of CD-SB02. In the Chip Dump area just east of the CNF subarea (outside view of Figure 7-2A), no TPH exceedances were detected in borings CD-SB03 and CD-SB04 (Aspect, 2004b). Total cPAH and naphthalene concentrations at CD-SB01 and CD-SB02 were below respective unrestricted soil screening levels.

The soil TPH exceedance at CD-SB02 is inferred to result from a surface spill of hydraulic oil from the former conveyor.

7.2.2.2 Groundwater

Table 7-2C presents the pre-RI and RI groundwater chemistry data for the CNF subarea. The mercury groundwater data are discussed below. Figure 7-2C presents the 2009-2011 groundwater mercury, pH, and ORP data for the CNF subarea, while Figure 7-2D presents a zoomed-in view of those same data for the Law-1 area.

In addition to monitoring for mercury, groundwater at several wells within the CNF subarea has also been monitored for petroleum hydrocarbons, because it is downgradient of the Million Gallon Tanks subarea, where petroleum hydrocarbons are the COCs. Because fuel storage in the Million Gallon Tanks appears to be the primary source for petroleum hydrocarbons in groundwater within the CNF subarea, those data are presented in the discussion of the Million Gallon Tanks subarea (described in Section 7.5). Notably, porewater sampling conducted within the Log Pond intertidal zone downgradient of this area indicates dissolved-phase TPH is not reaching the marine environment at concentrations of concern (discussed in Section 7.5.2.2 below).

Fill Unit Groundwater

Dissolved mercury concentrations in Fill Unit groundwater across the CNF subarea are generally below the 0.059 µg/L screening level, except in the westernmost area where elevated soil mercury occurs. Well EMW-16S in southeastern portion of the dredge fill also has detected dissolved mercury (averaging 0.086 µg/L) slightly above the conservative screening level (Figure 7-2C).

CHEMFIX

Notably, no groundwater mercury exceedances are observed downgradient of the Chemfix deposit. Fill unit monitoring wells CF-MW01 and CF-MW02, located on the downgradient edge of the Chemfix deposit, have detected dissolved mercury concentrations ranging from 0.004 to 0.01 µg/L, below the 0.059 µg/L screening level. Likewise, downgradient wells EMW-7S, EMW-8S, EMW-10S, and EMW-20S, nearer to the Long Pond, have similar dissolved mercury concentrations, ranging from non-detect (less than the 0.001 µg/L) to 0.01 µg/L. Dissolved mercury was not detected (less than 0.2 µg/L) in these wells when monitored in 1993. The current groundwater pH in these four wells ranges from 6.2 to 6.8.

The empirical groundwater monitoring data demonstrate that mercury concentrations in the Chemfix are protective of Site groundwater quality, in accordance with WAC 173-340-747(9). The Chemfix has been in place for 34 years, so sufficient time has elapsed for mercury leaching to groundwater to occur if it were going to occur. Ecology's 1977 Order DE-3677 prohibits disturbance of the geotextile/asphalt cap covering the Chemfix without Ecology's written approval, so the current conditions can be considered representative of future Site conditions with respect to Chemfix leachability.

FORMER WASTEWATER SETTLING BASIN

On the west end of the subarea, dissolved mercury exeedances are detected in Fill Unit wells within the footprint of the former Settling Basin (EMW-2S, EMW-14S, CP-MW03, L1-MW04, and L1-MW05).

Located between EMW-2S and EMW-14S on the south and L1-MW05 on the north, wells CP-MW03 and L1-MW04 have dissolved mercury concentrations ranging from 0.3 to 0.5 µg/L and near-neutral groundwater pH (7.0 to 7.5) (Figure 7-2C). Wells CP-MW03 and L1-MW04 are both screened across the high-mercury-concentration layer of saturated soil at the bottom of the former Wastewater Settling Basin (soil samples with 1,050 and 1,760 mg/kg mercury within screened intervals; Figure 7-1D). Despite the very high soil mercury concentration within the wells' screened intervals, relatively low dissolved mercury concentrations occur in both wells.

Similar to CP-MW03, well EMW-14S is screened across the bottom of the former Settling Basin, with up to 160 mg/kg soil mercury within its screened interval. Based on comparing this well's soil and groundwater mercury concentrations with those at CP-MW03, and reviewing the distribution of the Caustic Plume depicted on Figure 7-1G, the dissolved-phase mercury at EMW-14S may be derived predominantly from a source farther south within the former Chlor-Alkali plant facility.

The highest dissolved mercury detected within the former Settling Basin footprint occurs at well L1-MW05, located near the inferred northern edge of the former Basin. This well is also screened across the high-concentration layer at the inferred bottom of the former Basin (108 mg/kg soil mercury within the screened interval), and had 4 µg/L dissolved mercury and 7.7 pH in the December 2010 groundwater sample (Figure 7-2D).

LAW-1 AREA, DOWNGRADIENT OF FORMER SETTLING BASIN

Downgradient of the former Settling Basin, at well Law-1, the Fall 2009 and Spring 2010 dissolved mercury concentrations were 20 and 33 µg/L, considerably higher than observed there in 1992-1993 (1.4 to 4 µg/L). The 2009-2010 groundwater pH readings

(8.1 and 8.9) were also higher than measured in 1992-1993 (7.0 to 7.3) (Table 7-2C). As part of the RI supplemental investigation, Fill Unit well CP-MW10 was installed east of Law-1 to help verify the 2009 data from Law-1 and provide an additional groundwater monitoring location downgradient of the former Wastewater Settling Basin. Low dissolved mercury concentrations (0.03 and 0.01µg/L) and neutral groundwater pH (6.9 and 7.0) were measured at CP-MW10 in April and December 2010, respectively (Figure 7-2C).

As described above, the existing soil mercury data do not document a localized source of soil mercury at or around the Law-1 well location. Note that Law-1 is the only monitoring well from the initial Law Environmental (1992) investigation that was sampled for the current RI. Law-1 is housed within an above-grade protective monument, and at the time of RI sampling, was surrounded by concrete rubble and logs. It had not been sampled since 1993 (ENSR, 1994a). At the start of the 2009 RI field program, all Site monitoring wells including Law-1 were redeveloped. During redevelopment, Law-1 produced water steadily and, while the water was somewhat rusty, it was not overly turbid and there was no obvious indication of well damage; therefore, the well was determined to be in adequate condition for groundwater sampling during the RI.

Subsequently, as part of the 2010-2011 interim action pre-design investigation, extensive additional groundwater investigation was conducted to further assess the nature and extent of dissolved mercury concentrations in the Law-1 area. The investigation included completion of six additional Fill Unit soil borings/monitoring wells (L1-MW01 through L1-MW06) and three wellpoints (L1-WP1, L1-WP2, and L1-WP3) in the intertidal zone downgradient of Law-1 (Figure 7-2D). The intertidal wellpoints, screened between depths of approximately 1.5 to 4.5 feet below the beach grade, are located at or above the upper edge of the thin layer capping area of the current Log Pond sediment cap, where the cap has reportedly been thinned slightly by wave erosion (RETEC, 2005); therefore, the wellpoints are expected to be screened into contaminated Log Pond sediment beneath the current sediment cap.

Groundwater samples were collected in December 2010 from new wells L1-MW01 through L1-MW05, wellpoint L1-WP1, and pre-existing wells AMW-01, CP-MW03, CP-MW10, and Law-1. In February 2011, groundwater samples were collected from wells Law-1, L1-MW01, L1-MW02, L1-MW03, and L1-MW06, and wellpoints L1-WP1, L1-WP2, and L1-WP3. The three wellpoints were sampled twice over an approximately 4-hour period when they were exposed during lower tidal stages to assess concentration variability throughout a portion of the low-tide cycle. The groundwater samples were analyzed for dissolved mercury and field parameters, plus sulfide, sulfate, DOC, dissolved iron and manganese, alkalinity, and TDS, to provide supplemental information supporting potential detailed geochemical analysis.

Compared to the dissolved mercury concentrations detected at Law-1 in the Fall 2009 and Spring 2010 monitoring (20 to 33 µg/L), the concentration detected at Law-1 was much lower (1.0 µg/L) in the December 2010 sample, and comparable (17.8 µg/L) in the February 2011 sample (Table 7-2C). The dissolved mercury concentrations detected in groundwater samples from well L1-MW01, located within about 5 feet of Law-1, generally tracked with the Law-1 results (0.46 and 14.6 µg/L in December 2010 and February 2011, respectively) (Figure 7-2D).

East of Law-1, dissolved mercury concentrations below the 0.059 µg/L screening level were detected at new well L1-MW03 (0.025 µg/L in December 2010 and 0.022 µg/L in February 2011), and, consistent with the previous RI data, at well CP-MW10 (0.0098 µg/L in December 2010).

West of Law-1 and outside the 1974 dredge fill, dissolved mercury concentrations at well L1-MW02 declined from 35 µg/L to 2.1 µg/L between the December 2010 and February 2011 samples – opposite of the change observed at Law-1/L1-MW01. We interpret the variable groundwater quality at Law-1/L1-MW01 and L1-MW02 to be a result of seasonally variable groundwater flow directions, as discussed below.

Downgradient of L1-MW02, dissolved mercury was detected at 0.43 µg/L during the February 2011 sampling of well L1-MW06 (Figure 7-2C). At well AMW-01, located further north of L1-MW06, the December 2010 groundwater sample contained 0.0032 µg/L dissolved mercury, similar to concentrations detected in the previous 2009-2010 RI samplings (0.001 and 0.0003 µg/L).

Consistent with the conceptual site model for mercury mobility and transport described in Section 7.1.3, the higher dissolved mercury concentrations observed in the Law-1 area occur in association with relatively higher groundwater pH, DOC, and sulfide, and lower ORP, than measured in surrounding/upgradient wells with lower dissolved mercury concentrations. Figure 7-2D depicts the Law-1 area groundwater geochemical data with the dissolved mercury data. The groundwater in this area is not as strongly caustic (pH between about 8.5 and 10.0) as that observed in the Caustic Plume core, but there is a clear relationship between higher pH and higher dissolved mercury.

The collective soil data (described above) do not identify an obvious source of mercury or pH contributing to localized elevated dissolved mercury concentrations in the Law-1 area. Elevated soil mercury and elevated soil pH occur at depth within the footprint of the former Settling Basin (wells CP-MW03, L1-MW04, and L1-MW05), but dissolved mercury concentrations and groundwater pH in those wells are consistently lower than those detected at wells just outside (downgradient) of it (Figure 7-2C). The data suggest that a localized occurrence of contaminated debris or fill upgradient of Law-1, but not observed during the investigation to date, may be contributing localized mercury and higher pH to groundwater in the Law-1 area.

Groundwater Flow Directions in Law-1 Area

The variable dissolved mercury concentrations detected at L1-MW02 and Law-1/L1-MW01 suggest variations in local groundwater flow directions, potentially in response to seasonal changes, such as changes in recharge through the unpaved former Wastewater Settling Basin area.

The February 2011 groundwater elevation contours, shown on Figure 7-2D, suggest that nearshore groundwater in the Law-1 area flows toward the north-northeast, with ultimate discharge to the Log Pond. As part of the pre-design investigation, continuous water level data were collected for 72 hours in wells Law-1, L1-MW02, and L1-MW06 to provide refined assessment of whether there may be a preferred groundwater flow path to the northwest, around the west end of the low permeability soil berm containing the 1974 dredge fill, which is known to mute tidal fluctuations in groundwater within and behind it

(Section 4.2.2). If a greater tidal response were observed in new well L1-MW06 compared to Law-1, it would suggest that Log Pond surface water is in more direct hydraulic continuity with groundwater in the Salt Pad area than with groundwater behind the soil berm, which in turn could suggest a local preferred groundwater flow pathway to the Log Pond via the L1-MW06 location.

However, the new tidal monitoring data confirm only subtle tidal response in each of the three wells, and a smaller response (tidal efficiency of 1.5 percent) at L1-MW06 located closest to the tide than in either Law-1 or L1-MW02 (tidal efficiencies of 3.4 and 4.1 percent respectively; Figure 7-2E). The new data suggest that the existing north-south bulkhead, behind which L1-MW06 is positioned, provides a greater restriction to groundwater interaction with Log Pond surface water than does the soil berm. Well L1-MW02 has a higher groundwater elevation throughout the tidal cycle than either Law-1 or L1-MW06, indicating a gradient in both directions. However, the collective tidal monitoring data and contoured groundwater elevations for the area suggest that groundwater across the Law-1 area discharges primarily to the Log Pond via its southern shoreline, through the soil berm.

That said, the December 2010 groundwater quality data suggest temporary westward movement of impacted groundwater from source material within the 1974 dredge fill area to the L1-MW02 location. The former Wastewater Settling Basin is an unpaved area and thus an area of concentrated groundwater recharge within the otherwise-paved Site; the groundwater elevation data indicate a groundwater mound beneath the former Basin, away from which groundwater flows radially. We expect that larger seasonal recharge events temporarily increase the size of the groundwater mound, pushing groundwater within the 1974 dredge fill farther to the west (e.g., to L1-MW02). As a recharge event subsides, the mound shrinks. The western flow component likely ebbs and flows with changing recharge, resulting in the observed temporal groundwater quality changes at L1-MW02 and Law-1/L1-MW01.

While there is localized flow toward the west, the water level data indicate that the net groundwater flow in the Law-1 area is predominantly toward the north-northeast with discharge to the Log Pond through the soil berm, as outlined above.

Law-1 Area Intertidal Groundwater Quality

Within the intertidal zone downgradient of the Law-1 area, dissolved mercury concentrations detected in the intertidal wellpoint L1-WP1 declined from 1.3 µg/L in December 2010 to approximately 0.1 µg/L in February 2011 (0.125 and 0.074 µg/L in two samples collected about 4 hours apart). At wellpoints L1-WP2 and L1-WP3 down the beach, dissolved mercury concentrations in the two February 2011 groundwater samples collected about 4 hours apart were 0.13 and 0.16 µg/L at L1-WP2, and 0.051 and 0.053 µg/L at L1-WP3 (Figure 7-2D).

While there is variability in the detected dissolved mercury concentrations over the period of monitoring, the combined monitoring well-wellpoint data indicate substantial concentration attenuation in the tidally-influenced nearshore environment. Using the combined December 2010-February 2011 data, the average measured dissolved mercury concentration in the three upland monitoring wells was roughly 50 times higher than the average in the three intertidal wellpoints:

- 9.4, 7.5, and 18.5 µg/L in upland wells Law-1, L1-MW01, and L1-MW02, respectively (collectively average 12 µg/L); and
- 0.51, 0.15, and 0.05 µg/L in intertidal wellpoints L1-WP1, L1-WP2, and L1-WP3, respectively (collectively average 0.24 µg/L).

As stated above, the intertidal wellpoints extend into mercury-contaminated Log Pond sediment, suggesting that the dissolved-phase mercury concentrations measured in the wellpoint groundwater samples likely do not result solely from mercury being transported from the Law-1 area upland; some dissolved mercury is likely generated within the contaminated sediment. As such, the degree of concentration attenuation occurring between the upland wells and intertidal wellpoints is likely greater than indicated from these groundwater monitoring data.

A groundwater modeling assessment of tidally induced physical mixing indicates contaminant concentration reductions of about 50, under current conditions, between Law-1 area shoreline upland monitoring wells (e.g., Law-1) and the downgradient bioactive sediment zone, which is the point of exposure where the 0.059 µg/L screening level applies. Once the additional capping of the Log Pond occurs, as part of the Whatcom Waterway site cleanup, the predicted attenuation increases to approximately 440 (Aspect, 2012a). This information will be considered when assessing remedial alternatives during the FS.

Lower Sand Unit Groundwater

The Lower Sand Unit within the CNF subarea shows no mercury impacts. In the RI groundwater sampling and analysis, dissolved mercury concentrations in the Lower Sand Unit well EMW-29D, positioned between the Chemfix deposit and the Log Pond, are at or below 0.005 µg/L. When monitored in 1993, Lower Sand Unit wells EMW-29D and (now inaccessible) EMW-30D had no detectable dissolved mercury (below 0.2 µg/L). In addition, well CP-MW05, completed beneath the bottom of the former Wastewater Settling Basin, has detected mercury concentrations of 0.006 to 0.017 µg/L. Groundwater pH in the Lower Sand Unit wells ranges from 7.4 to 7.5 (Table 7-2C).

7.2.2.3 Soil Vapor

Anchor (2003b) sampled and analyzed mercury in vapor associated with the Chemfix at the four borings AS-12, AS-13, AS -14, and AS-15, drawing vapors from below the geotextile liner covering the Chemfix. Total mercury vapor concentrations at the four locations were below the 1.4 µg/m^3 unrestricted screening level, with detectable concentrations only at AS-13 (0.78 µg/m^3). The empirical data indicate that the Chemfix material is not generating mercury vapors that pose a vapor intrusion risk.

During the RI, mercury soil vapor sampling and analysis was also conducted at two locations (CP-VP02 and CP-MW03V) within the footprint of the former Wastewater Settling Basin. Detected mercury vapor concentrations in both locations (0.01 and 0.04 µg/m^3, respectively) were more than an order of magnitude below the 1.4 µg/m^3 unrestricted screening level. The empirical data indicate that soil and groundwater mercury concentrations within the former Wastewater Settling Basin are not generating mercury vapors that pose a vapor intrusion risk.

The soil vapor data for the CNF subarea are depicted on Figure 7-2F, and are tabulated in Table 7-2E.

7.2.3 Contaminant Fate and Transport

7.2.3.1 Source Control

Source control actions taken to date in the CNF subarea include the 1976 excavation and chemical stabilization of wastewater sludge from the Wastewater Settling Basin (Section 2.1.1), and the 1998 cleanup of sludge spilled north of the brine sludge tanks (GP, 1998). Decommissioning of the Chlor-Alkali plant and construction-related soil removals conducted around it between 1999 and 2002 (summarized in Section 6.1.1 of Aspect, 2009a) also controlled potential sources of mercury in and adjacent to the CNF subarea.

Following those actions, elevated soil mercury concentrations remain within the Chemfix and within and adjacent to the former Wastewater Settling Basin. Based on empirical data, the Chemfix is not a source of mercury to groundwater or soil vapor at concentrations of concern for either media. The data indicate that soils within the former Wastewater Settling Basin are not a source of mercury to soil vapor.

The Settling Basin soils appear to be a source of mercury to groundwater, but the data are not consistent. The wells with the highest detected soil mercury (CP-MW03 and L1-MW04) have 10-fold lower groundwater mercury concentrations than observed at well L1-MW05 (with 10-fold lower soil concentrations). Higher soil pH was measured during drilling of wells within the former Wastewater Settling Basin, but groundwater in those wells is not caustic (below pH 7.8).

The source of dissolved mercury and higher pH at Law-1/L1-MW01 is inferred to be a localized occurrence of contaminated debris or fill near the wells, but such material is not documented.

The data also indicate a localized release of hydraulic oil to shallow soils in the area of the former Chip Dump conveyor on the eastern edge of the CNF subarea. Hydraulic oil is composed of heavy-range petroleum that is not readily leachable or volatile.

7.2.3.2 Attenuation/Transport Processes

Section 7.1.3 and Appendix C detail the transport and attenuation processes for mercury that are applicable to this subarea. There is a localized area of moderately alkaline Fill Unit groundwater within the CNF subarea (to pH 9.1 at EMW-14S), but the highly alkaline groundwater of the caustic plume core (pH > 10) does not extend north into the CNF subarea. Consequently, mercury mobility is expected to be limited within the majority of the CNF subarea, and the groundwater monitoring data, excluding the Law-1 area, support that conceptual model.

Within the Law-1 area, the higher dissolved mercury concentrations occur in association with relatively higher groundwater pH, DOC, and sulfide, and lower ORP than measured in surrounding/upgradient wells with lower dissolved mercury concentrations. The groundwater in the Law-1 area is not as strongly caustic (pH between about 8.5 and 10) as that observed in the Caustic Plume subarea, but there is a clear relationship between higher pH and higher dissolved mercury. The groundwater quality, including mercury concentrations in the Law-1/L1-MW01/L1-MW02 wells, appears seasonally variable,

potentially in response to episodic recharge through the unpaved former Settling Basin. The data indicate substantial attenuation of dissolved mercury concentrations with distance downgradient from the upland shoreline, primarily as a result of groundwater tidal mixing prior to reaching mudline.

7.2.4 Exposure Pathways and Receptors

Mercury is present in CNF subarea soil and groundwater at concentrations above screening levels. TPH is also present in soil above screening levels at the location of the former chip dump conveyor. Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the subarea include:

- Residents or patrons contacting mercury-contaminated soils and/or inhaling mercury-contaminated dust;
- Workers directly contacting mercury-contaminated soils and groundwater (dermal contact, incidental ingestion) and/or inhaling mercury-contaminated dust during excavation or other construction-related activities;
- Aquatic ecological receptors becoming directly exposed to mercury in marine sediment or water; and
- Humans consuming aquatic biota contaminated by discharges of mercury to marine sediment and surface water.

7.2.5 RI Conclusions for Confined Nearshore Fill/Chemfix Subarea

Mercury concentrations in soil within areas of the CNF exceed unrestricted and industrial soil screening levels. The soil TPH concentration at one location exceeds unrestricted and industrial soil screening levels. In addition, groundwater mercury concentrations within the former Wastewater Settling Basin/Law-1 area exceed groundwater screening levels based on protection of the marine environment. Petroleum in groundwater within the CNF subarea is addressed as part of the Million Gallon Tanks subarea (Section 7.5). Mercury in soil vapor is not a constituent of concern for this subarea.

The caustic plume groundwater appears to encroach into the southwestern portion of the CNF subarea, with dissolved mercury concentrations detected up to 5 μg/L. In the Law-1 area, at the northwest corner of the subarea, higher dissolved mercury concentrations (up to 35 μg/L) with moderately elevated pH are detected, but this is not part of the caustic plume as defined to the south. The collective data suggest that contaminated materials in the immediate vicinity of the Law-1 area, rather than mercury-contaminated soils within the upgradient Wastewater Settling Basin, are the principal source of the mercury and higher pH in Law-1 area groundwater. Dissolved mercury concentrations decline substantially as groundwater flows from the location of the Law-1 area upland monitoring wells into the intertidal zone, primarily as a result of groundwater tidal mixing.

Based on the RI information, assessment of remedial alternatives for mercury in the CNF subarea soil and groundwater, and petroleum in soil, is warranted in the FS.

7.3 Stormwater Swale Subarea

7.3.1 Contaminants of Concern and Source

Mercury is the COC for the Stormwater Swale subarea. The source for mercury in the Stormwater Swale was stormwater runoff from the Chlor-Alkali plant and a large surrounding area throughout plant operations and after. ENSR (1994a) measured mercury concentrations of 2 and 12 µg/L in stormwater runoff from within and around the Chlor-Alkali plant.

7.3.2 Nature and Extent of Contamination

7.3.2.1 Soil

Based on the data, shallow soils across most of the Swale contain soil mercury concentrations exceeding the 0.1 mg/kg soil screening level based on groundwater protection as well as the 24 mg/kg soil screening level based on unrestricted direct contact. Mercury above 24 mg/kg also occurs in shallow soil south of the Swale, and lesser distances west, north, and east of it. All of the detected soil mercury concentrations are below the 1,050 mg/kg industrial direct contact soil screening level. Figure 7-3A shows the soil mercury data, and the interpreted lateral extent of soil exceeding 24 mg/kg. The water table is present at depths ranging from about 1 to 3 feet below grade in the area. Table 7-3A presents the pre-RI and RI soil chemistry data for the Stormwater Swale subarea.

The collective data indicate mercury concentrations are highest in the upper 6 inches and decrease rapidly with depth in the Stormwater Swale subarea. During the RI, two soil borings (SW-SB01 and SW-SB02) were completed to depth in areas accessible to a drill rig on the edge of the swale adjacent to pre-RI concentrations of mercury above 24 mg/kg in surface soil (up to 73 mg/kg at D1, and up to 530 mg/kg at D3). Both RI borings detected soil mercury above 0.1 mg/kg to their total depths of exploration, but less than 2 mg/kg below a depth of 1 foot. In fact, the collective pre-RI and RI data indicate soil mercury concentrations greater than 24 mg/kg are limited to the upper 1 foot of soil. Notably, the highest soil mercury concentration detected in the subarea occurred in a 0- to 0.5-foot sample from pre-RI hand-augered boring D3 (530 mg/kg), but the mercury concentration declined to 13 mg/kg in the 1- to 1.5-foot sample and 5.4 mg/kg in the 2- to 2.5-foot sample from that location.

7.3.2.2 Groundwater

The Stormwater Swale is a groundwater recharge area for the Fill Unit aquifer, with a radial component of groundwater flow away from it (e.g., refer to Figure 4-5). Wells EMW-1S, EMW-4S, EMW-6S, and Law-6 are the closest wells located downgradient of it where dissolved mercury in groundwater has been analyzed (well locations shown on Figure 7-3A). These four wells were installed during the ENSR (1994) RI, at which time dissolved mercury was generally not detected in groundwater samples from them – albeit with a 0.2 µg/L reporting limit above the current 0.059 µg/L groundwater screening level The exception was dissolved mercury detected (0.3 µg/L) in one of four samples collected from well Law-6. The pre-RI groundwater data indicate the Stormwater Swale was not a significant source of mercury to groundwater, even when the Chlorine Plant was operating. Well Law-6 was in poor condition when inspected in 2009, so was not sampled during the RI. Well EMW-6S was sampled for hydrocarbons as part of the

Million Gallon Tanks subarea characterization, but was not analyzed for mercury, during the RI.

During the RI sampling and analysis in 2009-2010, with improved analytical capabilities, dissolved mercury concentrations at downgradient well EMW-1S and EMW-4S have been below 0.02 µg/L. The groundwater in this area has neutral to slightly acidic pH (6.3 to 7.0 in 2009-2010). Table 7-3B presents the pre-RI and RI dissolved mercury data for these downgradient wells.

7.3.3 Contaminant Fate and Transport

7.3.3.1 Source Control

Mercury loading to the Stormwater Swale via stormwater runoff has been reduced since GP's closure of the Chlor-Alkali plant in 1999. Based on empirical groundwater data, soils within the Stormwater Swale subarea are not a source of mercury to groundwater at concentrations of concern.

7.3.3.2 Attenuation/Transport Processes

The RI data collected at downgradient wells EMW-1S and EMW-4S indicates that dissolved mercury concentrations are below the 0.059 µg/L screening level, which is consistent with the expected lack of mercury mobility in the subarea's neutral to slightly acidic groundwater. The large reductions in soil mercury concentrations below the upper foot of soil are consistent with limited transport of the mercury. Section 7.1.3 summarizes and Appendix C details the transport and attenuation processes for mercury that are applicable to the Stormwater Swale subarea.

7.3.4 Exposure Pathways and Receptors

Mercury is present in Stormwater Swale subarea soil at concentrations above the unrestricted soil screening level but below the industrial soil screening level. Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the subarea include:

- Residents or patrons contacting mercury-contaminated soils and/or inhaling mercury-contaminated dust, if no controls are in place to restrict land use activities.

7.3.5 RI Conclusions for Stormwater Swale Subarea

Mercury concentrations in soil within the Stormwater Swale subarea exceed the unrestricted soil screening level. The soil mercury concentrations are not a source of mercury to groundwater or air.

Based on the RI information, assessment of remedial alternatives for mercury in Stormwater Swale subarea soil is warranted in the FS.

7.4 Laurel Street Pipe Rack Subarea

7.4.1 Contaminants of Concern and Source

Mercury is the COC for the Laurel Street Pipe Rack subarea. The source of mercury was mercury-containing demolition debris from the Chlor-Alkali plant that had been buried at

the location. The debris was encountered in 1992 while excavating to construct several footings for a structure (rack) conveying an above-ground pipeline (white east-west-trending structure on Figure 7-4A) and a north-south-trending subsurface pipeline leading to it (in area of WLSS- series soil samples on Figure 7-4A) (Law/Crandall, 1993). The pipe rack structure was removed during demolition of the Tissue Mill.

7.4.2 Nature and Extent of Contamination

Tables 7-4A and 7-4B present the pre-RI and RI soil mercury data, and groundwater mercury data, respectively, for the Laurel Street Pipe Rack subarea. Table 7-4C presents pre-RI and RI groundwater chemistry data for constituents other than mercury. The water table is present at depths in the range of 3 to 6 feet below grade across the Laurel Street Pipe Rack subarea.

7.4.2.1 Soil

The highest soil mercury concentrations generally occur in the locations where the Chlor-Alkali plant debris was encountered during the 1992 construction. Based on data collected at that time (Law/Crandall, 1993), two soil samples collected from excavation sidewalls contained soil mercury concentrations above the 1,050 mg/kg industrial soil screening level: 1,100 mg/kg at the bottom of the 5-foot-deep subsurface pipeline excavation (sample WLSS-16), and 14,000 at a depth of 2 to 3 feet in the western sidewall of a footing excavation (sample PLHA-9-0-6). A soil mercury concentration of 1,344 mg/kg was also reported in the 7.5- to 10-foot sample from 2003 boring AS-10, located north of the former pipe rack. Figure 7-4A is a plan view map depicting the soil mercury data, and the inferred lateral extent of soils with mercury concentrations above the 24 mg/kg unrestricted direct-contact soil screening level, for the Laurel Street Pipe Rack subarea. Figure 7-4B is subsurface cross section through the 1992 excavation area and extending north through downgradient monitoring wells PR-MW01 and PR-MW02 (section location is shown on Figure 7-4A).

Based on the collective data, soils containing mercury concentrations above 24 mg/kg occur within an area covering approximately 100 feet south to north and 50 feet west to east, generally beneath and north of the former pipe rack. Within that area, there are localized occurrences of soil (three samples) with mercury concentrations above 1,050 mg/kg (Figure 7-4A). The water table is seasonally present at depths ranging from 3 to 6 feet below grade in the Laurel Street Pipe Rack subarea, and the elevated soil mercury occurs in unsaturated and saturated soil as illustrated on Figure 7-4B.

Within the 1992 excavation area (debris-containing source area), high concentrations of mercury occurred to the 5-foot depth of excavation in some sample locations (e.g., WLSS-16). The vertical extent of mercury above 24 mg/kg in the excavation area was bounded at a depth of 9 feet in RI boring PR-MW03. At pre-RI boring EMW-13S, just north of the excavation area, mercury exceeding 24 mg/kg was vertically bounded at a depth of 15 feet. In the area farther west and north of the 1992 excavation area, soil mercury exceeding 24 mg/kg occurred only in the 5- to 7-foot-depth interval at borings PR-SB04 (59 mg/kg) and PR-MW01 (219 mg/kg), and depths of 0 to 2.5 feet (31 mg/kg) and 7.5 to 10 feet (1,344 mg/kg) at AS-10 (Figure 7-4A).

TCLP-Leachable Mercury

To profile stockpiled soil for off-site disposal, Law/Crandall (1993) conducted TCLP mercury analyses for six samples of stockpiled soil with total mercury concentrations ranging from 16 to 100 mg/kg. TCLP-leachable mercury was not detected (<5 µg/L) in the six samples. During the Fall 2009 RI field program, TCLP mercury analyses were conducted for the two soil samples with highest detectable soil mercury (59 mg/kg in PR-SB04-5-7, and 219 mg/kg in PR-MW01-5-7). TCLP-leachable mercury was not detected (<1 µg/L) in either sample. Based on the TCLP data, the mercury-contaminated soil in the Laurel Street Pipe Rack subarea would not designate as characteristic dangerous waste if excavated.

7.4.2.2 Groundwater

Despite high mercury concentrations remaining in the Laurel Street Pipe Rack subarea soils, dissolved mercury concentrations in subarea groundwater are only slightly above the 0.059 µg/L screening level at well PR-MW03 (0.21 µg/L), completed in the location of maximum soil mercury concentrations, and are below the screening level in the three downgradient wells. In fact, the low-level mercury exceedance attenuates to below the screening level in less than 15 feet downgradient from PR-MW-3 (up to 0.012 µg/L at well EMW-13S). The groundwater pH and dissolved mercury data for the Laurel Street Pipe Rack subarea wells are displayed in the groundwater data frame on the right side of Figure 7-4A. Table 7-4B presents the complete pre-RI and RI groundwater mercury data for the Laurel Street Pipe Rack subarea, while Table 7-4C presents the non-mercury groundwater data..

Groundwater pH is slightly alkaline in source area wells PR-MW03 and EMW-13S (7.6 to 7.9), and more alkaline at downgradient wells PR-MW01 (8.4 to 9.0) and PR-MW02 (10.5 to 10.6). Despite the alkaline groundwater, dissolved mercury concentrations are below the stringent screening level in wells PR-MW01 or PR-MW02.

ENSR (1994a) installed and then analyzed groundwater samples from well EMW-13S in 1993. Groundwater samples from the well were analyzed subsequently in 2004 and then for the RI in 2009 and 2010. The EMW-13S data therefore allow for assessment of dissolved mercury concentration temporal trends over the 17 years since removal of mercury-contaminated soil and debris in the Laurel Street Pipe Rack subarea. During that 17-year period, detected dissolved mercury concentrations at EMW-13S consistently declined: 180 in July 1993, 37 µg/L in December 1993, less than 0.1 µg/L (non-detect) in 2004, and now 0.0067 to 0.012 µg/L in 2009 and 2010. Figure 7-4C graphically illustrates the measured concentration reduction over time at well EMW-13S. Also during that time, groundwater pH declined from highly alkaline (9.9 to 13.9) in 1993-1994 to 7.4 in 2004, remaining at 7.6-7.7 in 2009-2010 (Table 7-4B).

7.4.2.3 Soil Vapor

The data indicate that mercury soil vapor concentrations are below the 0.14 $\mu g/m^3$ unrestricted air screening level. As discussed above, dissolved mercury concentrations in the Laurel Street Pipe Rack subarea groundwater are below the 0.059 µg/L marine-based screening level, which is also protective of vapor intrusion (0.89 µg/L is VI-based screening level for unrestricted use; Table 5-1).

As part of the 2003 RI Addendum (Anchor, 2003b), mercury soil vapor monitoring was conducted at three soil borings (AS-9, AS-10, and AS-11) in this subarea using the Jerome 431-X meter; measurements using the more reliable Lumex instrument were not conducted. While the Jerome meter is not considered as reliable for quantification, the data it provided indicate low vapor-phase mercury concentrations. As discussed in Anchor Environmental (2003b), the Jerome readings were on average 160 times higher than the Lumex readings based on data collected during the 2003 monitoring. The Jerome meter readings at the AS-9, AS-10, and AS-11 borings were 61, 3, and 65 $\mu g/m^3$, respectively. Applying the average ratio of Jerome to Lumex readings (160) results in predicted mercury soil vapor concentrations of less than 0.4 $\mu g/m^3$, below the 1.4 $\mu g/m^3$ unrestricted screening level.

7.4.3 Contaminant Fate and Transport

7.4.3.1 Source Control

Mercury-contaminated soil with debris was removed and disposed of off Site when encountered during the 1992 construction of the former Pipe Rack (Law/Crandall, 1993). Following that source removal, high soil mercury concentrations remain in place.

7.4.3.2 Attenuation/Transport Processes

Dissolved mercury concentrations in the Laurel Street Pipe Rack subarea groundwater monitoring wells are slightly above the 0.059 µg/L screening level in one well within the source soils, but below the screening level within a matter of feet downgradient from there. Section 7.1.3 summarizes and Appendix C details the transport and attenuation processes for mercury that are applicable to this subarea.

Within the source area (EMW-13S), dissolved mercury concentrations declined in concert with declining groundwater pH – mercury exceedances only occurred when groundwater pH was highly alkaline (1993-1994 data). Currently, groundwater pH is only slightly alkaline (< 8) in the source area where the highest soil mercury concentrations remain (wells PR-MW03 and EMW-13S). Groundwater with moderate and high alkalinity remains at downgradient wells PR-MW01 and PR-MW02, respectively, but dissolved mercury is not elevated in either of those wells. Groundwater throughout the Laurel Street Pipe Rack subarea is reducing, as it is throughout most of the Site, but not as strongly reducing as that observed in the caustic plume core (Section 7.1.2).

The collective data for the Laurel Street Pipe Rack subarea indicate that the highly alkaline, highly reducing conditions necessary to mobilize mercury have buffered within the source area, and soil mercury is no longer leaching to groundwater at concentrations of concern.

7.4.4 Exposure Pathways and Receptors

Mercury is present in soils of the Laurel Street Pipe Rack subarea at concentrations above unrestricted and industrial soil screening levels. The groundwater-to-surface water/sediment pathway is not complete for this subarea. Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, current and future potentially complete exposure pathways and receptors for the Laurel Street Pipe Rack subarea include:

- Residents and patrons contacting mercury-contaminated soils and/or inhaling mercury-contaminated dust; and
- Workers directly contacting mercury-contaminated soils and groundwater (dermal contact, incidental ingestion) and/or inhaling mercury-contaminated dust during excavation or other construction-related activities.

7.4.5 RI Conclusions for Laurel Street Pipe Rack Subarea

Mercury concentrations in soil within the Laurel Street Pipe Rack subarea exceed the unrestricted soil screening level and, in localized occurrences, the industrial soil screening level. The data indicate that the soil mercury concentrations are not a source of mercury to air or to groundwater at concentrations that pose a risk to the marine environment.

Based on the RI information, assessment of remedial alternatives for mercury in Laurel Street Pipe Rack subarea soil is warranted in the FS.

7.5 Million Gallon Tanks Subarea

7.5.1 Contaminants of Concern and Source

Petroleum hydrocarbons (TPH) and PAHs are COCs for the Million Gallon Tanks subarea. The source of the petroleum is the former Million Gallon Tank 2, which historically stored fuel oil, and fueling areas were also located just east of the tanks area. The other tanks in this subarea were used for storage of lignin-related products. Tank 2 was underlain by a 32-inch-thick concrete slab (documented when cored to allow drilling of boring MG-SB06 beneath the slab center during the RI). There is no visual evidence of significant cracks or breaches in the Tank 2 concrete slab.

7.5.2 Nature and Extent of Contamination

7.5.2.1 Soil

Table 7-5A presents the pre-RI and RI soil chemistry data for the Million Gallon Tanks subarea. Figure 7-5A depicts the total TPH, total cPAH, and naphthalene data for subarea soil; the individual tanks are also numbered on the figure for reference. Because of the data density within the 2006 soil excavation area, soil sample data for the excavation and surrounding area are provided in a detail window on the figure also. Based on water level data from monitoring well MG-MW01 immediately north of Tank 2, the water table is present at depths of 2 to 4 feet below grade. This section presents the subarea-specific TPH soil screening levels derived in accordance with MTCA, and then discusses the soil data relative to the screening levels.

Risk-Based Soil TPH Concentrations (EPH Data)

Human direct contact and groundwater protection can be addressed under MTCA by establishing a standard Method B (unrestricted use) or standard Method C (industrial use) soil cleanup level for TPH using analytical data from the Extractable Petroleum Hydrocarbon (EPH) analysis conducted on Site soil samples (WAC 173-340-740(3)(b)(iii)(B)(III); WAC 173-340-745(5)(b)(iii)(B)(III); WAC 173-340-900 Table 830-1). The EPH analysis quantifies concentrations of aromatic and aliphatic hydrocarbons in five carbon ranges covering the diesel and oil ranges.

To allow for calculation of risk-based TPH soil concentrations (screening levels), the EPH analysis was conducted on six soil samples from the Million Gallon Tanks subarea containing higher total TPH concentrations based on NWTPH-Dx analysis. The EPH data for the six samples MG-SB07-6-8,MG-SB09-6-7, MG-SB12-6-7, MG-SB13-7-8, MG-SB14-12-13, and MG-SB15-9-10 are presented in Table 7-5A. Detected concentrations of the TPH fractions from the EPH analysis and associated detected PAHs (cPAHs and naphthalenes) were input into Ecology's MTCATPH workbook (http://www.ecy.wa.gov/programs/tcp/tools/toolmain.html), which, using conservative default toxicity values for hydrocarbons in each carbon range, can estimate non-carcinogenic and carcinogenic risks for both unrestricted and industrial direct contact exposures. To represent soils across the Million Gallon Tanks subarea, the average concentrations from the subarea-specific samples were input for the calculations. The MTCATPH workbook can assess risks at higher or lower TPH concentrations than measured, assuming the same relative proportion of petroleum fractions (i.e., proportionally increasing or decreasing their concentrations for the calculations).

SOIL DIRECT CONTACT EXPOSURE PATHWAY

Using the MTCATPH analysis, a subarea-specific total TPH Method B (unrestricted) soil screening level of 4,029 mg/kg (rounded to 4,000 mg/kg) is calculated based on non-carcinogenic risk (Hazard Index = 1). However, to achieve acceptable direct contact risk, soils also need to have total cPAH concentrations below the 0.14 mg/kg total cPAH screening level based on carcinogenic risk. Both of these screening levels are used to assess soil direct contact compliance for unrestricted use. For soil direct contact under industrial land use, the Method C soil screening levels are 49,345 mg/kg total TPH (rounded to 49,000 mg/kg) based on subarea-specific MTCATPH analysis, and 18 mg/kg total cPAH. Both of these screening levels are used to assess soil direct contact compliance for industrial use.

SOIL-TO-GROUNDWATER (LEACHABILITY) PATHWAY

In addition, the MTCATPH workbook estimates dissolved-phase groundwater concentrations from soil leaching to evaluate the soil-leaching-to-groundwater pathway. However, the soil-to-groundwater worksheet evaluates risks for drinking water exposure, which is not an exposure pathway considered for Site groundwater (Section 5.2.1). Therefore, the worksheet was used to predict leachable concentrations of petroleum fractions and PAH compounds, assuming the contaminated soil is below the water table (dilution factor = 1) and contains the average measured subarea-specific aquifer fractional organic carbon content (f_{oc}) of 0.017 (1.7 percent).The predicted groundwater total cPAH concentration is compared against a 0.02 µg/L screening level based on marine protection, and the predicted groundwater naphthalene concentration is compared against the 83 µg/L groundwater screening level based on marine sediment protection, and 170 µg/L groundwater screening level based on protection of vapor intrusion (Table 5-1).

Assuming a TPH soil concentration of 10,000 mg/kg (soil screening level based on residual saturation as described below), the predicted total cPAH concentration leached to groundwater is 0.007 µg/L, which, applying toxicity equivalency factors (TEF) in accordance with MTCA, equates to a groundwater total cPAH concentration of 0.001 µg/L – an order of magnitude below the 0.02 µg/L marine-protection groundwater screening level, which is consistent with the low leachability of cPAHs. The predicted

groundwater concentration of (the more mobile) naphthalene leached from the same soil concentration/composition is 29 µg/L, below the 83 µg/L marine-based groundwater screening level and the 170 µg/L VI-based screening level.

To assess worst-case leaching of soil naphthalene for the Million Gallon Tanks subarea, the soil-to-groundwater analysis was also run with a naphthalene soil concentration equal to 50 mg/kg, the maximum concentration detected in subarea soil (Table 7-5A). Because the measured average naphthalene concentration was 1.6 mg/kg for the six soil samples analyzed for EPH, the calculation was run assuming a total TPH concentration of 97,454 mg/kg, which, by proportion for the average soil, equates to a naphthalene concentration of 50 mg/kg. By this analysis, leaching of 50 mg/kg naphthalene produced a predicted groundwater naphthalene concentration of 32 µg/L, below the 83 µg/L marine-based groundwater screening level and the 170 µg/L VI-based screening level.

Appendix F presents the MTCATPH workbook sheets with input data and results for the direct contact and soil-to-groundwater pathways.

The MTCATPH workbook provides a worksheet to assess the soil-to-air pathway, but states that this tool should be used for informational purposes only. The worksheet model predicts unacceptable indoor air risks if there are any detections of specific petroleum fractions. This fact, combined with Ecology's statement that the tool should be used for informational purposes only, limits its applicability for establishing site-specific cleanup levels, in our professional opinion. Subarea-specific soil vapor measurements are used to assess the soil-to-air pathway, as described below.

RESIDUAL SATURATION (NAPL GENERATION)

In addition to direct contact and soil-to-groundwater pathways, generation of mobile non-aqueous phase liquid (NAPL), i.e., residual saturation, also needs to be addressed when establishing TPH soil cleanup levels. Residual saturation is the concentration below which the NAPL (aka "free product") is not mobile. The residual saturation concentration depends on characteristics of the NAPL (e.g., density and viscosity) and soil (e.g., moisture content and permeability).

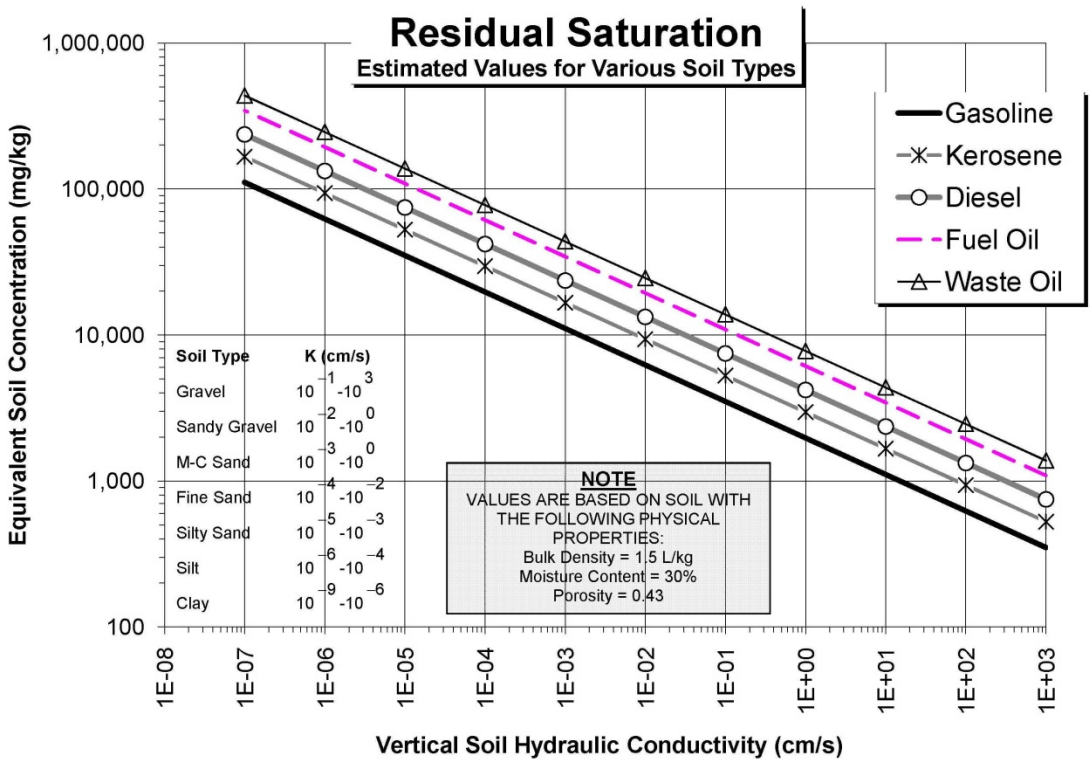
Defining a Site-specific residual saturation concentration is complicated but can be conservatively estimated based on literature values for similar product types and Site-specific information regarding soil permeability. Residual saturation applies to both unsaturated and saturated soil. Most field and laboratory experiments in the literature deal with residual saturation of unsaturated soil (above the water table).

For a given NAPL product, the residual saturation concentration is higher in saturated soil than unsaturated soil. On that topic, EPA (1995) states " Data compiled by Mercer and Cohen (1990) indicate the residual saturation of most NAPLs in these studies ranged from about 10% to 20% in the unsaturated zone and about 15% to 50% of the total pore volume in the saturated zone. The potential for higher retention of NAPLs in the saturated zone than in the unsaturated zone is due to several factors including: 1) potential existence of the NAPL as the wetting fluid relative to air in the unsaturated zone resulting in NAPL spreading to adjacent pores with residual held in small pore spaces, 2) existence of the NAPL as the non-wetting fluid in the saturated zone resulting in NAPL present as blobs in larger pore spaces, and 3) the relatively high fluid density ratio of NAPL to air in the vadose zone resulting in drainage (Anderson, 1988)."

In short, it is easier for NAPL to displace less-dense air and move into unsaturated pore space than to displace more-dense water and move into water-saturated pore space. The heavy-range fuel oil (e.g., Bunker C = Fuel Oil No. 6) burned for steam heat on Site, and reportedly stored in Million Gallon Tank 2, has a density very close to that of water (specific gravity of 0.95 to 1.03), so would more readily migrate into water-saturated pore space than lighter fuels such as diesel. It would, however, still drain more readily in the unsaturated zone than in the saturated zone. Therefore, it is conservative to apply a residual saturation value derived for NAPL in the unsaturated soil to soil below the water table (aquifer).

A reasonable conservative estimate for residual saturation of oil-range petroleum in soil at the Million Gallon Tanks subarea (and Bunker C Tank subarea; Section 7.6) can be estimated from theoretical calculations and literature values derived from lab and field experiments. The plot below, generated by Ecology (Charles San Juan, personal communication) provides theoretical estimates of residual saturation (as equivalent soil concentration in mg/kg) for various petroleum product types as a function of soil saturated vertical hydraulic conductivity (Kv), and using MTCA-default values for soil physical properties (total porosity, moisture content, and bulk density). The heavy-range fuel oil in the Million Gallon Tanks subarea (and Bunker C Tank subarea) is best represented by the dashed fuel oil line on the plot below.

Based on the collective pre-RI and RI data, an average horizontal hydraulic conductivity (Kh) for the Fill Unit, based on slug testing of 25 wells, is 3×10^{-4} cm/sec — a typical value for slightly silty to silty sand comprising most of the Fill Unit (Section 4.2.2). Applying a typical anisotropy ratio of 10:1 for Kh/Kv (vertical K is 10 times lower than horizontal K because of horizontal stratification), indicates a Kv on the order of 10^{-5} cm/sec. For fuel oil in soil of this vertical permeability, a residual saturation on the order of 100,000 mg/kg is estimated from the plot below. Applying the 3×10^{-4} cm/sec Kh value, to represent lateral mobility in the aquifer, would suggest residual saturation on the order of 50,000 mg/kg.



The American Petroleum Institute (API) research on NAPL mobility (API, 2000) which is based on compilation of existing measured data on residual NAPL concentrations in soil, presents residual saturation soil concentrations for fuel oils in a range of soil types. They include (rounded to 2 significant digits): 5,100 mg/kg for coarse gravel, 8,700 mg/kg for coarse sand and gravel, 17,000 mg/kg for medium to coarse sand, 30,000 mg/kg for fine to medium sand, and 51,000 mg/kg for silt to fine sand. API (2000) also provides a value of 53,000 mg/kg for lube and heavy fuel oil in "soil." These estimates appear generally consistent with the theoretical calculations plotted above. Based on that information, API proposes a 17,000 mg/kg screening level for fuel oil residual saturation, as a lower limit (API, 2000). The New Jersey Department of Environmental Protection has adopted this concentration in guidance for addressing petroleum releases (NJDEP, 2010). As an additional point of reference, Alaska Department of Environmental Conservation (ADEC) cleanup regulations (18 AAC 75) establish a maximum allowable concentration of 22,000 mg/kg for residual-range (oil-range) TPH in soils across that state, based on NAPL migration.

Specific to the Million Gallon Tanks subarea, it is probable that petroleum release(s) from Tank 2 and associated fueling locations occurred during the operational periods decades ago. Therefore, it is likely that NAPL has migrated in the subsurface as far as it is going to as a separate mobile phase, such that the remaining NAPL is likely present at or below residual saturation levels. Additionally, it is important to keep in mind that the Bunker C was heated to allow its being pumped under pressure for conveyance. Absent the heat, and moving through porous media rather than being pumped under pressure in open pipes, mobility of Bunker C is limited.

Based on the weight of evidence outlined above, a residual saturation value of 10,000 mg/kg is proposed as a reasonable conservative estimate for total TPH in the Million Gallon Tanks subarea. Soils in the 6-to7-foot-depth interval at boring MG-SB09 contain TPH (10,400 mg/kg) above this concentration.

The following two local MTCA cleanup site precedents support 10,000 mg/kg oil-range TPH as a conservative estimate for residual saturation concentration:

- Skykomish Maintenance and Fueling Facility. Page 5-7 of the site FS (RETEC, 2005) proposes a TPH residual saturation concentration of 30,000 mg/kg based on empirical data, but does not elaborate on those data. The site CAP (Ecology, 2007) defines 30,000 mg/kg TPH, with no evidence of mobile NAPL, as a remediation level for part of the facility, based on free production generation. Soil TPH cleanup levels based on other exposure pathways are lower concentrations; and

- Port of Bellingham's Central Waterfront site. Based on a site-specific LNAPL mobility investigation including soil centrifuging data, an average residual saturation was measured as approximately 10 percent of pore volume (AECOM, 2009). Using measured soil and NAPL parameters for that site, this equates to a soil TPH concentration of approximately 1.9 percent, or 19,000 mg/kg.

Even though it is likely no longer mobile as a separate phase, the residual petroleum contamination in the Million Gallon Tanks subarea remains a potential source for leaching dissolved-phase petroleum hydrocarbons to groundwater and, from contaminated groundwater and unsaturated soil, volatilizing vapor-phase petroleum hydrocarbons to air.

CONCLUSION REGARDING TPH SOIL SCREENING LEVELS FOR MILLION GALLON TANKS SUBAREA

Incorporating the collective subarea-specific soil TPH composition data, the analysis of soil EPH data for the Million Gallon Tanks subarea supports a 10,000 mg/kg soil TPH concentration as protective of groundwater via leachability (generating dissolved phase hydrocarbons) and NAPL mobility (e.g., NAPL was not observed when drilling boring MG-SB09 where soil TPH exceeds 10,000 mg/kg).

The subarea-specific Method B TPH soil screening for unrestricted use is 4,000 mg/kg, based on direct contact as the most restrictive exposure pathway. The subarea-specific Method C TPH soil screening level for industrial land use is 10,000 mg/kg, based on residual saturation (NAPL mobility) as the most restrictive exposure pathway.

Soil TPH Data

Soil "total TPH"[13] concentrations at six explorations exceed the subarea-specific 4,000 mg/kg Method B soil screening level, which is applicable for unrestricted land use.

Immediately north of the 2006 soil removal area between Tanks 1 and 2, a soil total TPH concentration of 9,300 mg/kg was detected in the 6- to 8-foot sample from boring MG-SB07. Approximately 25 feet west of that boring, 4,580 mg/kg TPH was detected in the 6- to 7-foot sample from boring MG-SB12. Approximately 50 feet north of Tank 2, 4,700

[13] Total TPH is the sum of diesel- and oil-range petroleum hydrocarbon concentrations.

mg/kg was detected in the 2- to 3-foot sample from boring MG-SB13. On the northeast side of Tank 1, a total TPH concentration was detected at 10,400 mg/kg in the 6- to 7-foot depth interval (1,310 mg/kg or less in two deeper soil samples; Figure 7-5A). Figure 7-5B is a subsurface cross section illustrating the vertical distribution of soil TPH concentrations in a northwest-southeast alignment across the Million Gallon Tanks subarea. Contours for total TPH concentrations of 4,000 and 10,000 mg/kg are depicted on the cross section.

Based on the collective soil chemistry data, and applying the MTCA three-fold compliance criteria (WAC 173-340-740(7)(d)[14]), TPH concentrations in the upper 15 feet of soil[15] within the Million Gallon Tanks subarea do not comply with the 4,000 mg/kg subarea-specific Method B soil screening level (protective of all exposure pathways). This is because there are two locations with soil TPH concentrations more than twice the screening level (8,000 mg/kg): at 6- to 7-foot depth at MG-SB09, and 6- to 8-foot depth at MG-SB07 (Figure 7-5A). The soil TPH concentrations pass the other two MTCA compliance criteria:

- Using Ecology's MTCAstat software (Site97.xlt; http://www.ecy.wa.gov/programs/tcp/tools/toolmain.html#Statistical_Tools) to statistically analyze the 85 soil TPH sample results from the upper 15 feet of subarea soil, the data set is determined to be lognormally distributed, with a 95 percent upper confidence limit on the mean concentration (95% UCL) of 2,300 mg/kg - below the subarea-specific Method B soil screening level. The MTCAstat output is presented in Appendix F; and
- Four of the 85 samples, less than 10 percent, exceed the screening level.

Based on the current data set, compliance with the 4,000 mg/kg Method B soil screening level could be achieved through removal of the soil from the two identified locations with soil TPH exceeding 8,000 mg/kg. However, soil cPAH concentrations above the 0.14 mg/kg unrestricted screening level would remain distributed throughout the subarea soils, typical of fill soil at long-term industrial sites.

The subarea soil TPH concentrations meet the three MTCA criteria for compliance with the 10,000 mg/kg Method C soil screening level for industrial land use. Because the screening level is based on groundwater protection, it applies to soil at all depths; therefore, the complete subarea soil TPH data set (89 samples from all depths) was analyzed. Using the MTCAstat software, the calculated 95% UCL soil TPH concentration is 2,200 mg/kg (Appendix F). One of the 89 samples (1 percent) exceeds the screening level, and the maximum detected concentration (10,400 mg/kg) is less than two times the screening level. No further action is required to meet the subarea-specific Method C soil screening level for TPH.

[14] Three-fold criteria: (1) 95% UCL on arithmetic mean concentration is below cleanup level; (2) No single concentration is more than two times the cleanup level; and (3) Less than 10% of the samples exceed the cleanup level.

[15] 0 to 15 feet is the depth of compliance for applying soil cleanup levels based on direct contact.

Soil PAH Data

Naphthalene concentrations above the 1.6 mg/kg unrestricted soil screening level, based on saturated soil leaching to groundwater for marine protection, were detected in explorations clustered around the former fuel storage Tank 2 (borings MG-SB05, MG-SB06, MG-SB07, MG-SB12, and MG-MW04; Figure 7-5A). The highest naphthalene concentration was detected in a sample of saturated soil collected beneath the center of former Tank 2 (50 mg/kg in 7- to 8-foot sample from MG-SB06), despite it having relatively low total TPH concentrations (450 mg/kg; Table 7-5A). Several soil samples with much higher TPH concentrations had much lower naphthalene concentrations:

- 6- to 8-foot sample from MG-SB07 with 9,300 mg/kg TPH and 4.1 mg/kg naphthalene;
- 6- to 7-foot sample from MG-SB09 with 10,400 mg/kg TPH and 0.86 mg/kg naphthalene;
- 6- to7-foot sample from MG-SB12 with 4,580 mg/kg TPH and 1.3 mg/kg naphthalene;

Evaluating the soil TPH data for the Million Gallon Tanks subarea collectively, there is a poor correlation between concentrations of naphthalenes and total TPH (coefficient of determination, R^2, of 0.11, applying a power function), as illustrated on the upper plot on Figure 7-5C. However, the correlation is skewed by the soil samples from MG-SB06 with higher naphthalenes concentrations, suggesting TPH at those two borings may represent a different hydrocarbon release (in type and/or age) from TPH observed elsewhere in the Million Gallon Tanks subarea. The high naphthalenes concentrations beneath Tank 2 (MG-SB06) may be associated with creosote-treated wood pilings supporting the former tanks (naphthalenes are a substantial component of creosote).

Total cPAH (TEQ) concentrations above the 0.14 mg/kg unrestricted soil screening level are relatively widespread in the upper 15 feet of soil across the subarea, with the two highest detected concentrations (3.55 and 4.22 mg/kg) in samples containing 9,300 and 1,070 mg/kg TPH, respectively (Figure 7-5A). Note that the 0.14 mg/kg unrestricted soil screening level, and the 0.31 mg/kg industrial soil screening level based on groundwater protection, are likely in the range of area background concentrations for total cPAHs; for example, a 90^{th} percentile concentration of 0.39 mg/kg total cPAH (TEQ) was determined from a 120-soil-sample data set collected from residential neighborhoods in Seattle (Ecology, 2011).

Evaluating the soil TPH data for the Million Gallon Tanks subarea collectively, there is a correlation apparent between concentrations of total cPAHs and total TPH (R^2 of 0.49), but there can also be two orders of magnitude variability in cPAH content for a given TPH concentration (bottom plot on Figure 7-5C).

7.5.2.2 Groundwater

Table 7-5B presents the pre-RI and RI groundwater TPH, PAH, and metals data for the Million Gallon Tanks subarea, and Table 7-5C presents pre-RI and RI groundwater data for VOCs, SVOCs other than PAHs, and PCBs. Figure 7-5D graphically presents the 2009-2010 data for total TPH, naphthalene, and total cPAHs in subarea groundwater. The groundwater TPH and PAH data are described below.

Groundwater TPH Data

Results from the Fall 2009 groundwater sampling event indicate elevated groundwater TPH concentrations extending downgradient of the Million Gallon Tanks subarea as far as monitoring wells CF-MW01 and CF-MW02, within the CNF subarea, a distance of approximately 500 feet. The detected TPH concentrations at CF-MW01 and CF-MW02 (3,300 and 1,630 µg/L respectively) were as high or higher than those detected in wells closer to the tanks (up to 2,520 µg/L at EMW-16S ; up to 1,360 µg/L at MG-MW01 next to Tank 2). Elevated TPH concentrations were also detected in wells EMW-6S west of the tanks (1,115 µg/L), and EMW-12S east of the tanks (820 µg/L). No NAPL was observed in the wells during pre-RI or RI groundwater sampling events.

Chromatograms generated during TPH laboratory analyses provide information to assess the type of petroleum product, or at least similarities and differences in petroleum type between samples. Review of chromatograms from the Fall 2009 TPH groundwater analyses indicates the following:

- Samples MG-MW01 and EMW-16S contain the same types of petroleum products;
- Sample EMW-6S contains a lighter product in addition to those in MG-MW01 and EMW-16S;
- Samples CF-MW02 and EMW-12S contain the same types of products; and
- Sample CF-MW01 does not match any other sample in the group.

The chromatograms for the TPH analyses are included in the laboratory data reports, included as part of Appendix H (lab data on CD).

The samples' chromatographic information, together with the high groundwater TPH concentrations at downgradient wells CF-MW01/CF-MW02 relative to that at MG-MW01, and an uncertain local groundwater flow direction because of an anomalous Fall 2009 groundwater elevation in well EMW-16S (Figure 4-4), raised uncertainty as to whether the groundwater TPH detected at wells CF-MW01 and CF-MW02 was associated with the Million Gallon Tanks source area. Consequently, the following additional data collection was conducted as part of the Spring 2010 supplemental investigation to better assess the direction and distance of groundwater TPH migration from the Million Gallon Tanks, in accordance with the first RI/FS Work Plan Addendum (Aspect, 2010a):

- New monitoring well MG-MW02 was installed south of Tank 2 to assess the potential for localized groundwater flow and thus TPH transport to the south (tanks are at edge of groundwater mound created by recharge from the Stormwater Swale; see Section 4.2.2 and Figure 4-5).
- New monitoring well MG-MW03 was installed to provide an additional data point for groundwater level and quality between the Tanks and wells CF-MW01/CF-MW02 to the north;

- TPH analyses were conducted for groundwater samples from wells EMW-7S, EMW-8S, and EMW-20S located near the Log Pond shoreline, and EMW-18S farther east of the Tanks; and
- Groundwater samples from wells MG-MW01, EMW-12S, EMW-16S, MG-MW03, CF-MW01, CF-MW02, EMW-7S, and EMW-8S were analyzed for petroleum biomarkers (a means to chemically fingerprint petroleum releases) in an effort to better define the continuity and migration of TPH from the Tanks.

The additional wells help confirm groundwater flow generally to the north from the Million Gallon Tanks (Figure 4-5).

For wells with groundwater TPH data from Fall 2009 and Spring 2010, the Spring (wet season) TPH concentrations were typically an order of magnitude lower than those detected in the Fall, with the highest detected concentrations of about 500 µg/L at wells EMW-16S and MG-MW03 (Figure 7-5D). The sampling and analytical methods used, including silica gel sample pretreatment to reduce bias from non-petroleum organics, were identical for the two data sets. The groundwater elevations in the wells were typically 0.5 to 1.5 feet higher in the Spring than Fall, and the lower TPH concentrations in the Spring (wet season) samples may be a result of more dilute groundwater from seasonal groundwater recharge. Several, but not all, of the wells sampled had higher groundwater dissolved oxygen in Spring than in Fall, which would be consistent with recharge of oxygenated water to the Fill Unit (Table 7-5B).

Ecology's report for the petroleum biomarker analyses concluded that the TPH detected in the Spring 2010 groundwater samples likely represent a highly weathered oil-range product (likely Bunker C), but the concentrations were too low to positively identify all the oil as one unique or distinct source (Ecology, 2010b). The biomarker analyses suggest a potential match in petroleum types (coal tar creosote) between wells EMW-16S and MG-MW03; however, the quantity of petroleum in EMW-16S was less than in MG-MW03 and a positive match could not be made. Those wells' biomarkers do not match with MG-MW01, next to Tank 2, and there are no other matches between samples indicated. Appendix G provides a copy of Ecology's (2010b) report documenting the biomarker analyses.

Wells MG-MW01 and EMW-16S were sampled during the RI and during the 2004 Phase II environmental assessment, providing for evaluation of concentration changes over a 6-year period. In 2004, total TPH was detected at concentrations of 1,200 µg/L and 750 µg/L, respectively, which, with the variability observed between Fall 2009 and Spring 2010 concentrations, indicates no clear trends over time (Table 7-5B).

As described in Section 7.2, TPH contamination is also present in shallow soil adjacent to the former Chip Dump conveyor east of CF-MW02 (boring CD-SB02; Figure 7-5A). This appears to be a localized release associated with the former hydraulic machinery, but could potentially contribute some dissolved-phase TPH to groundwater wells CF-MW01 and CF-MW02. However, based on the collective information, we conclude that the groundwater petroleum observed in wells CF-MW01 and CF-MW02 is associated primarily with the petroleum release(s) at the former Million Gallon Tanks.

Notably, at wells EMW-8S and EMW-20S located closest to the Log Pond shoreline, the Spring 2010 groundwater TPH concentrations were low (280 and 67 µg/L, respectively; Figure 7-5D), indicating concentrations are attenuated approaching the shoreline.

DECEMBER 2010 GROUNDWATER TPH DATA

In accordance with RI/FS Work Plan Addendum 2 (Aspect, 2010c), the two newly installed wells, MG-MW04 and MG-MW05, and prior wells MG-MW01, MG-MW03, EMW-16S, were sampled and analyzed for diesel- and oil-range petroleum hydrocarbons (NWTPH-Dx), extractable petroleum hydrocarbons (EPH), PAHs, total suspended solids (TSS), and field parameters in December 2010.

Groundwater TPH was not detected above analytical reporting limits (RLs) in the five subarea wells during the December 2010 sampling event. The reported TPH concentrations in Table 7-5B are estimated values above the method detection limit (MDL) but below the RL. The low groundwater TPH concentrations are consistent with those measured during the Spring 2010 RI sampling event.

EPH analyses were conducted for the December 2010 groundwater samples primarily to assess correlation of specific petroleum fractions between groundwater and soil vapor, since the vapor analyses quantify petroleum fractions, not TPH (mixture of fractions; soil vapor data discussed below). Because the EPH analysis divides the TPH mixture into its component carbon fractions, it provides lower analytical reporting limits (RLs) for each fraction (40 µg/L) than can be obtained for the full TPH mixture using the NWTPH-Dx analysis (RLs typically above 200 µg/L).

The groundwater EPH data indicate that the detected petroleum fractions in subarea groundwater are aromatic hydrocarbons, with the highest concentrations being within aromatic carbon ranges C10-C12 (in which naphthalene occurs) and C16-C21 in both near-source wells (MG-MW04 and MG-MW05[16]) and downgradient wells (MG-MW03 and EMW-16S). Aliphatic hydrocarbon fractions were essentially not detected in the five groundwater samples, and the highest aromatics concentrations were detected in MG-MW05 where the elevated naphthalenes were detected (Table 7-5B).

NOVEMBER 2012 INTERTIDAL SEDIMENT POREWATER TPH DATA

In November 2012, a pair of intertidal sediment porewater samples (MG-PW-01 and MG-PW-02) were collected at the downgradient edge of the Million Gallon Tanks subarea during low tide, in accordance with an Ecology-approved sampling plan (Aspect, 2012b). The objective of the sediment porewater sampling was to measure TPH concentrations in groundwater downgradient of the Million Gallon Tanks Subarea, as close as practical to the point of groundwater discharge to surface water to assess whether the groundwater-to-surface water pathway is complete for the low-level TPH concentrations detected in nearshore monitoring wells.

TPH concentrations in both porewater samples were below the PQL in each of the two sediment porewater samples. TPH was reported at very low estimated concentrations, just above the method detection limits (MDL), in both samples (up to 27 µg/L, and order of magnitude below the PQL) (Table 7-5B). The empirical data indicate that TPH from the Million Gallon Tanks subarea is not migrating to sediment porewater or surface water.

[16] Petroleum fractions were not detected in the MG-MW01 groundwater sample by EPH analysis.

Groundwater PAH Data

As discussed in Section 5.2.1, and presented in Table 5-1, there are no marine surface water quality criteria for petroleum mixtures (TPH), but there are for the individual PAH compounds that are present in the oil-range petroleum (screening levels of 0.02 µg/L for total cPAHs and 83 µg/L for naphthalene). Because of this, and the absence of TPH measured in downgradient sediment porewater, the groundwater PAH data, not the TPH data, are primarily assessed for determining compliance with screening levels in this RI and, ultimately, the need for remediation of groundwater.

NAPHTHALENE DATA

Naphthalene concentrations detected in groundwater at the Million Gallon Tanks subarea exceeded the 83 µg/L screening level at two monitoring wells – MG-MW05 (450 µg/L), located immediately downgradient of the highest detected TPH soil concentration (at MG-SB09), and MG-MW03 (up to 160 µg/L) located roughly 200 feet downgradient (Figure 7-5D). The detected naphthalene concentrations at well MG-MW05 also exceeded the 170 µg/L VI-based screening level. At well EMW-16S, approximately 100 feet downgradient of MG-MW05, naphthalenes concentrations ranged from 50 to 79 µg/L in the three 2009-2010 sampling events, below the most stringent screening level.

Just downgradient of Tanks 1 and 2, detected naphthalene concentrations were below screening levels: 15 µg/L in MG-MW04 and up to 5.4 µg/L in MG-MW01 (Figure 7-5D).

Further downgradient, naphthalene concentrations were less than 0.1 µg/L at wells CF-MW01 and CF-MW02 in Fall 2009 and Spring 2010 sampling events (Figure 7-5D).

Naphthalenes are readily degradable under the anaerobic groundwater conditions which occur at the Site (ATSDR, 1995), and the data indicate that naphthalenes in Million Gallon Tanks subarea groundwater attenuate to below the marine-based screening level prior to approaching the Log Pond shoreline. The natural attenuation is supported by naphthalenes concentration declines observed over time. Total naphthalenes concentrations showed meaningful declines over the 6-year period between 2004 and 2009-2010 at the high-concentration wells MG-MW01 (decline from 39 to less than 6 µg/L) and EMW-16S (decline from 265 to less than 80 µg/L) (Table 7-5B).

As discussed below, petroleum fractions and naphthalene were not detected in soil vapor sample MG-VP02, collected next to well MG-MW05 where the highest groundwater naphthalenes were detected. The empirical data indicate that the 450 µg/L groundwater naphthalene at that location does not pose a vapor intrusion risk, and the 170 µg/L RI groundwater screening level based on that exposure pathway is overly conservative for this subarea.

The collective empirical groundwater data indicate that naphthalene concentrations in the Million Gallon Tanks subarea groundwater do not pose a risk to human health via vapor intrusion or to ecological receptors via discharge to the Log Pond.

CPAH DATA

Concentrations of total cPAHs (TEQ) in groundwater near the former Tanks exceed the 0.02 µg/L groundwater screening level. The total cPAH groundwater exceedances are detected in wells MG-MW01 and MG-MW04 (up to 0.43 µg/L) next to Tank 2, MG-MW05 immediately northeast of Tank 1 (1.6 µg/L), and MG-MW03 (up to 0.28 µg/L) and EMW-16S (up to 2.4 µg/L) within 150 feet north/north-northeast of Tank 2. Notably,

total cPAH concentrations were below the screening level at downgradient well CF-MW02 during both monitoring events, as depicted on Figure 7-5D.

At well CF-MW01, located roughly 200 feet inland from the shoreline, total cPAH groundwater concentrations were measured in Fall 2009 and Spring 2010, with field duplicate samples collected during both events. In the 2009 event, detected total cPAH concentrations in the duplicate samples were 0.021 µg/L (depicted on Figure 7-5D) and 0.015 µg/L; the average from the two samples is 0.018 µg/L. cPAHs were not detected in either of the duplicate samples collected in Spring 2010 (Table 7-5B). The data indicate that well CF-MW01 bounds the downgradient extent of total cPAH exceedances in Million Gallon Tanks subarea groundwater.

Note that the 0.02 µg/L groundwater screening level for total cPAHs does not incorporate attenuation occurring from tidal mixing or other processes occurring in the Fill Unit aquifer as groundwater approaches the point of discharge to marine sediment. cPAHs are high-molecular-weight compounds with a high affinity for absorption to organic matter in the aquifer matrix and relatively low mobility in solution, as well as low biodegradability. Comparing data from 2004 and 2009-2010, total cPAH concentrations marginally increased at MG-MW01 (from 0.21 to below 0.27 µg/L) and declined at EMW-16S (from 4.5 to below 2.4 µg/L) (Table 7-5B).

Given cPAHs' low mobility in groundwater, and the fact that total cPAH concentrations at well CF-MW01 (200 feet from the Log Pond shoreline) are below screening levels, provides empirical evidence that total cPAHs in the Million Gallon Tanks subarea groundwater do not pose a risk to ecological receptors via groundwater discharge to the Log Pond or to human health via consumption of fish/shellfish from it.

7.5.2.3 Soil Vapor

Of the four soil vapor samples collected in the Million Gallon Tanks subarea, in accordance with Aspect (2011c), petroleum hydrocarbons were not detected in the following three locations (Table 7-5D; Figure 7-5E):

- MG-VP01, located adjacent to the former fuel storage tank 2 and between boring MG-SB07 (9,300 mg/kg soil TPH, 28 mg/kg naphthalenes) and MG-SB12 (4,580 mg/kg TPH, 21 mg/kg naphthalenes);
- MG-VP02, located between boring MG-SB09, where the subarea's highest soil TPH has been detected (10,400 mg/kg), and MG-MW05 where 236 µg/L TPH and the subarea's highest total naphthalenes concentration (511 µg/L) have been detected in groundwater; and
- MG-VP03, located adjacent to boring MG-SB13, where higher TPH concentrations occur in the upper several feet of soil.

Conversely, the soil vapor sample collected from the MG-VP04 location, adjacent to monitoring well EMW-16S, contained detectable petroleum concentrations including a detected concentration of one fraction (3,000 µg/m^3 of aliphatic C8-C10) slightly more

than twice its 1,400 µg/m^3 soil vapor screening level[17] for unrestricted land use. The detected vapor concentration of this fraction is equal to but does not exceed the 3,000 µg/m^3 industrial soil vapor screening level (Table 7-5D). As discussed above, aliphatic petroleum hydrocarbons were not detected in the groundwater sample from the EMW-16S well (Table 7-5B). The well was installed as part of the 1994 Chlor-Alkali site RI (ENSR, 1994a), and petroleum was not analyzed for in soil during its drilling.

Naphthalene was not detected in any of the soil vapor samples collected, including at the MG-VP02 vapor location adjacent to well MG-MW05 where 450 µg/L naphthalene (511 µg/L total naphthalenes) was detected in groundwater.

Based on the empirical soil vapor data, we conclude that subarea soil TPH concentrations protective of groundwater (i.e., to 10,000 mg/kg) are also protective of the soil-to-air pathway, in accordance with WAC 173-340-740(3)(b)(iii)(C)(III). In addition, the groundwater petroleum hydrocarbon concentrations (including naphthalene to 450 µg/L) adjacent to the highest petroleum soil concentrations are protective of the groundwater-to-air pathway.

7.5.3 Contaminant Fate and Transport

7.5.3.1 Source Control

In late 2006, prior to demolition of the Million Gallon Tanks, approximately 30 tons of petroleum-saturated soil were removed from this subarea (RETEC, 2007). The Tanks are now removed, except for the reinforced concrete slabs that they sat on. Following the limited source control, elevated concentrations of TPH and PAHs remain in subarea soils around the former Tanks.

7.5.3.2 Attenuation/Transport Processes

The low-molecular weight naphthalenes have quite different environmental fate and transport characteristics than the high-molecular weight cPAHs. In general terms, naphthalenes are mobile and degradable under a range of environmental conditions. Conversely, cPAHs are neither mobile nor degradable under most environmental conditions. Naphthalenes have a lower affinity than the cPAHs to sorb to organic matter in the aquifer, with a soil organic carbon-water partition coefficient (Koc) of 1,190, compared to a Koc range from 357,000 to 1,789,000 for the various cPAH compounds (WAC 173-340-900 Table 747-1). This means that cPAHs will sorb much more strongly to the aquifer matrix, rather than stay in solution, compared to naphthalenes.

The PAHs are considered semivolatile organic compounds, and naphthalene has greater volatility than do the cPAHs. The dimensionless Henry's Law constant (a measure of volatility) for naphthalene is one to three orders of magnitude higher than for the cPAH compounds (Ecology's CLARC database). Naphthalenes are considered for evaluation of vapor intrusion risks, but cPAHs are not.

[17] Soil vapor screening levels are established as 10x the MTCA air cleanup levels, assuming a 10x slab attenuation factor (refer to Section 5.3). Note that the calculated soil vapor screening levels for naphthalene and the aromatic C10-C12 petroleum fraction, for which naphthalene is the surrogate compound for toxicity, are below the respective analytical practical quantitation limits for Air Toxics' TO15-APH analysis, therefore the screening levels are set as the PQLs in accordance with MTCA.

Naphthalene can biodegrade readily under aerobic conditions. The cPAHs also biodegrade under aerobic conditions, but at much slower rates than naphthalene (Aronson et al., 1999). Under the anaerobic conditions that predominate in groundwater at the Site, cPAHs are not expected to biodegrade significantly, although some biodegradation of naphthalenes is still expected (Aronson and Howard, 1997). Based on laboratory experimental results referenced in ATSDR (1995), a microbial degradation half life for naphthalene is about 2 days compared to a range of 200 to 400+ days for the individual cPAH compounds. These lab-derived half lives are not applicable to the Site field conditions, but provide a relative comparison of biodegradability between naphthalenes and cPAHs.

7.5.4 Exposure Pathways and Receptors

Because this subarea contains multiple COCs, each with multiple screening levels depending on exposure pathway, the individual screening level exceedances by exposure pathway and receptor are described below for clarity.

For future unrestricted use of the Million Gallon Tanks subarea, concentrations of the following petroleum hydrocarbons in soil exceed unrestricted soil screening levels:

- 10,000 mg/kg TPH based on protection of groundwater and vapor intrusion, and 4,000 mg/kg TPH based on direct contact;
- 0.14 mg/kg total cPAHs based on direct contact; and
- 1.6 mg/kg naphthalenes based on soil-to-groundwater-to-sediment pathway. However, the RI groundwater data empirically document that naphthalene in subarea groundwater is not migrating to the marine environment. Empirical soil vapor data also indicate that naphthalenes do not pose a vapor risk.

For continued industrial use of the Million Gallon Tanks subarea, concentrations of the following petroleum hydrocarbons in soil exceed industrial soil screening levels:

- 10,000 mg/kg TPH based on protection of groundwater and vapor intrusion;
- 0.31 mg/kg total cPAHs based on groundwater for protection of the marine environment (total cPAH concentrations are below 18 mg/kg direct contact screening level); and
- 1.6 mg/kg naphthalenes based on soil-to-groundwater-to-sediment pathway. However, the RI groundwater data empirically document that naphthalene in subarea groundwater is not migrating to the marine environment. Empirical soil vapor data also indicate that naphthalenes do not pose a vapor risk.

Concentrations of total cPAHs in the Million Gallon Tanks subarea groundwater exceed the 0.02 μg/L screening level based on protection of the marine environment.

Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the Million Gallon Tanks subarea include:

- Residents or patrons contacting soil and/or inhaling dust contaminated by TPH and cPAHs; and
- Humans consuming aquatic biota contaminated by cPAH discharges to marine sediment and surface water, if cPAH-contaminated groundwater were to migrate and discharge to the Log Pond/Whatcom Waterway.

7.5.5 RI Conclusions for Million Gallon Tanks Subarea

TPH/cPAH concentrations in soil within the Million Gallon Tanks subarea exceed unrestricted and industrial soil screening levels, which are based on different pathways for potential exposure. Soil TPH concentrations of approximately 10,000 mg/kg (proposed residual saturation concentration) were detected in a depth interval of about 6 to 8 feet on the north side of Tank 1. Soil concentrations of naphthalene also exceed screening levels based on soil-to-groundwater-to-sediment (and groundwater-to-vapor), notably beneath former Tank 2. However, naphthalenes are not migrating to the marine environment, and are not detected in soil vapor, including next to Tank 2, indicating that the soil screening levels for that pathway are overly conservative.

In addition, cPAH and naphthalene concentrations in groundwater exceed groundwater screening levels based on protection of the marine environment, and the naphthalene concentration at one well exceeds its VI-based screening level. The cPAH groundwater exceedances are located more than 200 feet from the Log Pond shoreline, and due to the limited mobility of cPAHs, the likelihood of dissolved-phase cPAH migration to the Log Pond is low. Detected concentrations of naphthalenes in groundwater attenuate to below the marine-based screening level hundreds of feet upgradient of the shoreline, and therefore do not pose a risk to the marine environment.

Based on the RI information, assessment of remedial alternatives for TPH and cPAHs in soil, and cPAHs and naphthalene in groundwater, is warranted in the FS.

7.6 Bunker C Tank Subarea

7.6.1 Contaminants of Concern and Source

Petroleum hydrocarbons, TPH and PAHs, are COCs for the Bunker C Tank subarea. The source of the petroleum is a former 375,000-gallon Bunker C Storage Tank located near the Whatcom Waterway, which stored Bunker C fuel for burning in the Steam Plant. Based on historical records, this Tank was used prior to Tank 2 in the Million Gallon Tanks subarea. The Bunker C Tank apparently had no bottom but was located within a subsurface, concrete walled secondary containment structure. The Bunker C required heating to reduce viscosity and allow its pumping conveyance from the storage tank to the adjacent Steam Plant.

7.6.2 Nature and Extent of Contamination

7.6.2.1 Soil

Table 7-6A presents the pre-RI and RI soil chemistry data for the Bunker C Tank subarea. Figure 7-6A depicts the total TPH, total cPAH, and naphthalene data for subarea soil. The water table depth is in the range of 6 to 8 feet below grade at well BC-MW01 located on the north edge of the former Tank, and is deeper (9 to 12 feet) and subject to

greater tidal fluctuation at well BC-MW02, located 60 feet to the north-northwest, adjacent to the Whatcom Waterway. This section presents the subarea-specific TPH soil screening levels derived in accordance with MTCA, and then discusses the soil data relative to the screening levels.

Risk-Based Soil TPH Concentrations (EPH Data)

To allow for calculation of risk-based TPH soil concentrations (screening levels), seven soil samples from the Bunker C Tank subarea containing higher TPH concentrations (by NWTPH-Dx analysis) were also analyzed using EPH method. The EPH data for samples BC-MW02-8-10, BC-MW02-17-19, BC-SB07-4-5, BC-SB08-15.5-16.5, BC-SB14-6.5-7.5, BC-SB17-8-9, and BC-SB18-9-10 are presented in Table 7-6A. The analysis methodology, including analyzing the average concentration for the Bunker C Tank subarea calculated from the seven soil samples, was the same as that applied for soil samples from the Million Gallon Tanks subarea, as described in Section 7.5.2.

SOIL DIRECT CONTACT EXPOSURE PATHWAY

Using the MTCATPH analysis, a subarea-specific Method B (unrestricted) soil screening level for total TPH is 3,061 mg/kg (rounded to 3,100 mg/kg), based on non-carcinogenic risk (Hazard Index = 1). However, to achieve acceptable direct contact risk, soils also need to have total cPAH concentrations below the 0.14 mg/kg total cPAH screening level based on carcinogenic risk. Both of these screening levels are used to assess direct contact compliance for unrestricted use. For soil direct contact under industrial land use, the Method C soil screening levels are 37,679 mg/kg total TPH (rounded to 38,000 mg/kg) based on subarea-specific MTCATPH analysis, and 18 mg/kg total cPAH. Both of these screening levels are used to assess soil direct contact compliance for industrial use.

SOIL-TO-GROUNDWATER (LEACHABILITY) PATHWAY

The MTCATPH workbook was also used to predict dissolved-phase groundwater concentrations from soil leaching to evaluate the soil-to-groundwater pathway. using the same methods described in Section 7.5.2 but applying the average measured subarea-specific aquifer f_{oc} of 0.021 (2.1 percent).

Assuming a TPH soil concentration of 10,000 mg/kg (soil screening level based on residual saturation), the predicted total cPAH concentration leached to groundwater is 0.005 µg/L, which, applying TEFs in accordance with MTCA, equates to a groundwater total cPAH (TEQ) concentration of 0.0008 µg/L – two orders of magnitude below the 0.02 µg/L groundwater screening level. The predicted groundwater concentration of naphthalene leached from the same soil concentration/composition is 18 µg/L, below the 83 µg/L screening level for marine sediment protection and the 170 µg/L VI-based screening level.

As described above, soil sample BH-SB02-12-16 had the highest naphthalene concentration (68 mg/kg) detected in the subarea. As such, assumed ‘worst-case’ leaching of soil naphthalene is assessed by simulating leaching of the average TPH composition at a concentration that would proportionally produce a soil total naphthalenes concentration of 68 mg/kg (TPH = 202,767 mg/kg). In the analysis, leaching of 68 mg/kg total naphthalene produced a predicted groundwater naphthalene concentration of about 20 µg/L, below the 83 µg/L marine-based groundwater screening level and the 170 µg/L VI-based screening level.

Appendix F presents the MTCATPH workbook sheets with input data and results for the direct contact and soil-to-groundwater pathways.

RESIDUAL SATURATION (NAPL GENERATION)

Like the Million Gallon Tanks subarea, the petroleum in the Bunker C Tank subarea is heavy oil. Based on the weight of evidence presented for oil-range petroleum in the Million Gallon Tanks subarea (Section 7.5.2), a residual saturation concentration of 10,000 mg/kg total TPH is also proposed as a reasonable conservative estimate for the Bunker C Tank subarea. Soils within the footprint of the former Tank containment structure contain TPH concentrations (up to 97,000 mg/kg; described below) well above the proposed residual saturation level.

CONCLUSION REGARDING TPH SOIL SCREENING LEVELS FOR MILLION GALLON TANKS SUBAREA

The analysis of soil EPH data for the Bunker C Tank subarea supports a 10,000 mg/kg soil TPH concentration as protective of groundwater via leachability (generating dissolved phase) and NAPL mobility.

The subarea-specific Method B TPH soil screening for unrestricted use is 3,100 mg/kg, based on direct contact as the most restrictive exposure pathway. The subarea-specific Method C TPH soil screening level for industrial land use is 10,000 mg/kg, based on residual saturation (NAPL mobility) as the most restrictive exposure pathway.

Soil TPH Data

Soil TPH concentrations across much of the Bunker C Tank subarea exceed the 3,100 mg/kg RI soil screening level for unrestricted land use; localized areas contain TPH concentrations above the 10,000 mg/kg screening level for industrial use.

Table 7-6A presents the pre-RI and RI soil chemistry data for the Bunker C Tank subarea. Figure 7-6A depicts the total TPH, total cPAH, and naphthalene data for subarea soil. Figure 7-6A depicts the inferred areal extent within which soil TPH concentrations exceed 3,100 mg/kg and 10,000 mg/kg. Outside the footprint of the former Bunker C Tank, the TPH exceedances are not vertically continuous, and occur within specific depth intervals. Figures 7-6B and 7-6C are subsurface cross sections, oriented northwest-southeast and southeast-northwest, respectively, which illustrate the inferred areas of soil TPH exceeding 3,100 and 10,000 mg/kg. The cross section locations are shown on Figure 7-6A.

Petroleum-saturated soils occur within the footprint of the former containment structure around the former fuel Tank, with detected soil TPH concentrations of 88,000 mg/kg or more in the upper 3 feet at BC-SB01. (The former containment structure is labeled on Figure 7-6A; within it, the footprint of the former Tank is faintly visible as a dark partial circle.) The current soil grade within the former containment structure is 4 to 5 feet below surrounding grade, surrounded by sheer walls (concrete ecology blocks), thus limiting accessibility for a truck-mounted drill rig. BC-SB01 was a hand-augered boring, and it encountered refusal at less than 3 feet at more than one location, preventing deeper sampling within the footprint of the former tank containment.

Just outside the east wall of former containment structure, soil TPH concentrations up to 30,000 mg/kg were encountered to a depth of 12 feet, with a concentration of 310 mg/kg in the 12- to 16-foot sample. Immediately outside the former structure's north wall, 8,600

mg/kg TPH was detected in the 10- to 11.5-foot sample from boring BC-MW01, with concentrations below 3,100 mg/kg above and below it. Just outside the former structure's northwestern wall, 4,240 mg/kg TPH was detected in the 1- to 2-foot soil sample from BC-SB09, with soil TPH concentrations below 100 mg/kg in the six deeper soil samples collected to a depth of 20 feet. TPH concentrations were below 3,100 mg/kg in all soil samples from BC-SB11, located just north of BC-SB09 along the oil conveyance lines between the former Tank and Steam Plant. Just outside the containment structure's southeast wall, soil TPH concentrations above 3,100 occur to a depth of 9 feet in boring BC-SB14; the 6.5- to 7.5-foot sample contained 13,500 mg/kg TPH. The data suggest soil TPH concentrations exceeding 10,000 mg/kg to depths of 12 feet or more beneath the former tank containment structure.

Detected soil TPH concentrations further south and southeast of the former containment structure are below 3,100 mg/kg.

Between the former containment structure and the Whatcom Waterway, soil TPH concentrations between 3,100 and 7,000 mg/kg were detected at variable depths extending north to the Whatcom Waterway bulkhead, but the detected concentrations are below 10,000 mg/kg. Borings and depths in this area with detected soil TPH exceeding 3,100 mg/kg include:

- 8- to 12-foot interval at BH-SB02 (6,900 mg/kg);
- 6- to 10-foot interval at BC-MW04 (up to 6,100 mg/kg);
- 9- to 10-foot interval at BC-SB12 (5,300 mg/kg);
- 6- to 7-foot interval at BC-SB19 (4,130 mg/kg); and
- 4- to 5-foot interval at BC-SB07 (4,650 mg/kg).

Because the Bunker C oil was used as a fuel source to produce steam in the Steam Plant (west of the former Bunker C Tank), there is the potential for historical releases of Bunker C within the Steam Plant, particularly since the Bunker C was delivered in heated (less viscous) form and under pumped pressure. Elevated soil TPH concentrations, including concentrations above 10,000 mg/kg, are documented at depth in the area north of the former Steam Plant: between depths of 8 and 10 feet (refusal at 10 feet) at boring BC-SB17, and between depths of 9 and 13 feet at BC-SB18. The 3- to 4-foot sample from BC-SB17 also contained 3,830 mg/kg TPH. Northwest of BC-17/BC-18, along the bulkhead, soil TPH was detected at 5,600 mg/kg in the 15.5- to 16.5-foot sample from boring BC-SB08. Soil TPH was detected at only 1,060 mg/kg in the 15- to 16-foot sample from boring BC-MW05, located within 10 feet of BC-SB08 (Figure 7-6A).

The TPH-saturated soil occurrences at the BC-17 and BC-18 locations do not appear to be continuous with similarly high TPH concentrations beneath the former Bunker C Tank's containment area, since intervening borings BC-SB09, BC-SB15, BC-SB03, and BC-SB16 have low soil TPH concentrations (Figure 7-6A). Consequently, the TPH observed at the BC-SB17 and BC-SB18 locations is inferred to be a separate release occurring from the former Steam Plant where the fuel was burned to produce steam heat, and/or from subsurface conveyance piping within which the fuel was pumped (under heat and pressure) to the Plant from the storage tank.

The data suggest that the Bunker C petroleum is "fingered" within specific depth intervals, but those depths are variable (Figure 7-6A).

Based on the collective soil data, TPH concentrations in the upper 15 feet of soil within the Bunker C Tank subarea do not comply with the 3,100 mg/kg subarea-specific Method B soil screening level, based on any of the MTCA three-fold compliance criteria: the calculated 95% UCL is 4,300 mg/kg, several locations have TPH greater than twice the screening level, and 12 percent (14 of 117) of the samples exceed the screening level. The MTCAstat output is presented in Appendix F. Soil cPAH concentrations also need to be assessed for the direct contact exposure pathway.

Evaluating soil TPH data from all depths, the subarea soil does not comply with the 10,000 mg/kg Method C soil screening level, because soil TPH concentrations at some locations, beneath the former storage tank and Steam Plant, are greater than twice the screening level. The other two MTCA compliance criteria are met: the calculated 95% UCL is 3,000 mg/kg, and 4 percent of the samples (5 of 117) exceed the screening level (Appendix F). Based on the current data set, removing soil containing TPH concentrations above twice the screening level (20,000 mg/kg) could achieve compliance with the Method C screening level.

Soil PAH Data

The naphthalene concentrations in soils of the Bunker C Tank subarea generally comprise a lower proportion of the total TPH than observed in the Million Gallon Tanks subarea. We expect this is because petroleum releases in the Bunker C subarea are older and more weathered (naphthalenes are among the most degradable components of the Bunker C oil). Soil naphthalene concentrations above the 1.6 mg/kg unrestricted soil screening level, based on leaching to groundwater for marine protection, occur in samples with greater than 4,100 mg/kg TPH, with one exception: 68 mg/kg naphthalene was detected within a sample of saturated soil (12- to 16-foot depth) from boring BH-SB02, which contained only 1,430 mg/kg TPH (Figure 7-6A). The shallower (8- to 12-foot) sample from this boring contained a higher total TPH concentration (6,900 mg/kg) but was not analyzed for PAHs in the 2004 assessment.

In the Steam Plant area, the 8- to 9-foot and 9- to 10-foot soil samples from boring BC-SB17 had saturation-level TPH concentrations (31,000 and 37,000 mg/kg), as well as the subarea's highest total naphthalenes concentration (134 and 123 mg/kg, respectively; 120 and 110 mg/kg of which is 2-methylnaphthalene). Note that there are marine water and sediment quality criteria for naphthalene, but not for 1-methylnaphthalene, 2-methytlnapthalene, or total naphthalenes (sum of the three); therefore there are ground-protection-based soil screening levels for naphthalene only (see Tables 5-1 and 5-2). The soil naphthalenes concentrations at BC-SB17 are substantially higher than observed with saturation levels of TPH elsewhere in the subarea: at boring BC-SB18, 70 feet to the northeast (4.6 mg/kg total naphthalenes with 33,000 mg/kg TPH), and at the former storage tank (5.7 mg/kg total naphthalenes with 88,000 mg/kg TPH at BC-SB01 inside the tank containment; 34 mg/kg total naphthalenes with 30,000 mg/kg at BC-SB02 immediately outside it) (Table 7-6A). Because naphthalenes are readily degraded in the environment, the data indicate less weathering of the subsurface petroleum release at the BC-SB17 location than at BC-SB18 or former tank locations.

There is a general correlation between concentrations of naphthalene and total TPH in the Bunker C Tank subarea soils, but there is also considerable variability in naphthalene content (R^2 of only 0.35), as illustrated on the upper plot on Figure 7-6D. The 68 mg/kg naphthalene concentration at BH-SB02-12-16 is an outlier relative to the other samples. There was sheen and odor observed between depths of about 8 and 15 feet when drilling BH-SB02 in 2004; however, there was also plastic debris reported between depths of 4 and 8 feet, and organic debris and wood discontinuously between depths of about 8 and 15 feet. Therefore, it is possible the anomalous naphthalenes concentration in the 12- to 16-foot sample from BH-SB02 is related to materials other than Bunker C (e.g., creosoted pilings supporting structures in that area, or buried debris).

Detected total cPAH concentrations above the 0.14 mg/kg unrestricted soil screening level occur sporadically in the upper 15 feet of soil across the Bunker C Tank subarea. The cPAH exceedances of the unrestricted screening level occur in samples with and without elevated TPH concentrations (e.g., 0.21 mg/kg total cPAHs with 186 mg/kg total TPH at BC-MW03 immediately east of the clarifier; less than 0.2 mg/kg total cPAH with 88,000 mg/kg total TPH at BC-SB01 inside tank containment) (Figure 7-6A). The highest total cPAH concentrations occur in the oil-saturated samples from BC-SB17 (6.1 mg/kg total cPAH with 31,000 mg/kg) and BC-SB18 (6.7 mg/kg total cPAH with 33,000 mg/kg TPH). In addition, 5.4 mg/kg total cPAHs was detected in the 12- to 16-foot sample from BH-SB02, where 108 mg/kg naphthalene concentration was also detected; as described above, it is possible that the elevated cPAHs in this sample are associated with materials other than Bunker C. Detected total cPAH concentrations in a few other subarea samples exceed the 0.31 mg/kg industrial soil screening level based on groundwater protection, but concentrations less than about 0.5 mg/kg may be representative of urban background conditions, as described in Section 7.5.2.1 (refer to Ecology, 2011). Total cPAH concentrations are below a 18 mg/kg industrial direct contact screening level in all subarea soil samples analyzed.

There is a general correlation apparent between concentrations of total cPAHs and total TPH in Bunker C Tank subarea soils (R^2 of 0.54), but, as observed in soils of the Million Gallon Tanks subarea, there can be one to two orders of magnitude variability in cPAH content for a given TPH concentration (bottom plot on Figure 7-6D).

7.6.2.2 Groundwater

Table 7-6B presents the pre-RI and RI groundwater TPH, PAH, and metals data for the Bunker C Tank subarea. Table 7-6C presents the pre-RI and RI groundwater VOC, SVOC other than PAH, and PCB data for the Bunker C Tank subarea Figure 7-6E displays the 2009-2010 groundwater data for TPH and PAHs (total naphthalenes and total cPAHs). The groundwater data are described below.

Groundwater TPH and PAH Data

A very thin accumulation of free-phase LNAPL (fraction of an inch) floats on the water table at monitoring well BC-MW01, located immediately adjacent to the north side of the former tank containment structure, but measured concentrations of total naphthalenes and total cPAHs in that well and the other four Bunker C Tank subarea wells are below 1 µg/L.

Because LNAPL was observed in BC-MW01 during the Fall 2009 sampling event, a groundwater sample was not collected from it, in accordance with the RI/FS Work Plan. The LNAPL was again observed during the Spring and December 2010 events, but groundwater samples were collected from it then (in part to collect dissolved metals data in Spring 2010, described below). The Spring and December 2010 groundwater samples contained 2,500 and 82 µg/L total TPH, respectively, both of which are well below the 6,700 µg/L concentration detected in 2004 (Table 7-6B). Detected total TPH concentrations in wells BC-MW02, BC-MW03, BC-MW04, and BC-MW05 were below the analytical reporting limit during the 2009 and 2010 sampling events.

During the 2009-2010 sampling and analysis, total naphthalenes were detected at concentrations up to 0.52 µg/L in the five subarea wells. The very low dissolved-phase naphthalenes concentration in groundwater, including in association with LNAPL in well BC-MW01, provides strong evidence that the residual Bunker C is not leaching naphthalenes at concentrations of concern. The most recent naphthalenes concentrations detected at BC-MW01 (0.52 and 0.036 µg/L) are at least an order of magnitude less than detected in 2004 (11.1 µg/L; Table 7-6B), providing evidence of natural attenuation.

The current detected total cPAH concentrations in groundwater from well BC-MW01 (0.91 and 0.047 µg/L in Spring and December 2010, respectively) exceed the 0.02 µg/L screening level, with the Spring 2010 concentration slightly higher than detected in 2004 (0.16 µg/L). Total cPAH concentrations detected in downgradient wells BC-MW02 and BC-MW04, adjacent to the Whatcom Waterway, are at or below the 0.02 µg/L screening level indicating limited transport of cPAHs. Likewise, detected total cPAH concentrations in well BC-MW03, east of the clarifier and adjacent to the Whatcom Waterway, and BC-MW05 downgradient of the Steam Plant at the Whatcom Waterway bulkhead, are below the 0.02 µg/L screening level (Figure 7-6E).

The empirical groundwater data, and predictive analyses of soil leaching to groundwater (MTCATPH) discussed above, provide a strong weight of evidence that the weathered Bunker C residual in this subarea is not leaching dissolved hydrocarbons to groundwater at concentrations of concern. In addition, sediment bioassay testing conducted in the Whatcom Waterway offshore of the Bunker C Tank subarea met Sediment Quality Standards biological criteria (Anchor and Landau, 2003). Based on the empirical bioassay testing, Ecology has concluded that TPH and PAH concentrations in Bunker C Tank subarea groundwater are protective of Whatcom Waterway sediment (Brian Sato, Ecology, personal communication via email to Steve Germiat, Aspect Consulting; January 6, 2011).

Dissolved Metals Data

In accordance with the RI/FS Work Plan, groundwater samples from well BC-MW02 were analyzed for dissolved metals to assist with defining the extent of elevated metals associated with the Acid Plant subarea (presented below in Section 7.7). During the Fall 2009 groundwater sampling event, very high dissolved metals concentrations were reported for the BC-MW02 groundwater sample despite having typical groundwater pH (6.6) and ORP (-265 mV) (Table 7-6B). Particularly anomalous was a reported concentration of 412 µg/L dissolved lead, since lead is quite insoluble under normal environmental conditions. The groundwater sample from BC-MW02 was highly saline (electrical conductance of 40,700 µS/cm) suggesting the potential for saline analytical

interferences in the laboratory analysis for trace metals. In accordance with the Addendum to the RI/FS Work Plan, BC-MW02 was re-sampled as part of the RI supplemental investigation in Spring 2010, using EPA Method 1640 sample pretreatment (reductive precipitation) to reduce salinity interferences for the dissolved metals analyses. In addition, groundwater samples from BC-MW01 and BC-MW03 were also analyzed for dissolved metals to assess the extent and potential source of elevated dissolved metals observed in well BC-MW02.

The dissolved metals exceedances from the Fall 2009 groundwater sample from BC-MW02 were not replicated in the Spring 2010 sample, with no dissolved metals concentrations exceeding screening levels in any of the wells sampled. Notably, dissolved lead was not detected in the sample (below 0.045 µg/L), and the other metals with high reported concentrations in the Fall sample (copper, nickel, and zinc) were similarly reduced (Table 7-6B).

Given well BC-MW02's location just 20 feet from the Whatcom Waterway, saltwater intrudes into the Fill Unit there twice daily, and the groundwater samples from the well are correspondingly saline. Use of EPA Method 1640 pretreatment for the Spring 2010 groundwater sample reduced salinity interferences for the trace metals analyses. The difference in reported dissolved metal concentrations between the untreated Fall and pretreated Spring samples, and the anomalously high dissolved metals concentrations in the Fall sample (esp. 412 µg/L dissolved lead), indicates a high bias to the Fall analytical results attributable to salinity interferences. We conclude that the reported dissolved metals data from the Fall 2009 groundwater sample are not representative of groundwater quality at that well, and that those data should be rejected based on data quality concerns. No dissolved metals exceedances were detected in neighboring wells BC-MW01 or BC-MW03 during the Spring 2010 sampling and analysis event.

Based on the collective data, dissolved metals are not considered COCs for the Bunker C Tank subarea.

7.6.2.3 Soil Vapor

Of the four soil vapor samples collected from this subarea, in accordance with Aspect (2011c), naphthalene was not detected in any of the samples, and petroleum hydrocarbons were not detected above screening levels in three samples (Table 7-6D; Figure 7-6F):

- BC-VP02, located adjacent to BC-MW01, where up to 8,600 mg/kg TPH and 4 mg/kg naphthalenes were detected in soil, and a thin accumulation of LNAPL has been observed on the water table, next to the former Bunker C tank containment;

- BC-VP03, located between boring BH-SB02, where up to 6,900 mg/kg TPH and 108 mg/kg soil naphthalenes were detected in the subarea, and monitoring well BC-MW04 where up to 6,100 mg/kg TPH is detected in soil and 161 µg/L TPH is detected in groundwater; and

- BC-VP04, located adjacent to boring BC-SB17, where 3,800 mg/kg TPH is present in shallow soil (3-4 feet) and up to 37,000 mg/kg TPH and 134 mg/kg naphthalenes were detected in soil to 10 feet.

The soil vapor sample collected at BC-VP01, on the southeast edge of the tank containment, had detectable petroleum vapor concentrations above the unrestricted soil vapor screening level in the aliphatics C8-C10 fraction (19,000 µg/m^3) and aromatics C8-C10 fraction (2,100 µg/m^3); the aliphatics C8-C10 concentration is also above the industrial soil vapor screening level. This vapor probe is located adjacent to boring BC-SB02, where up to 30,000 mg/kg TPH and 34 mg/kg total naphthalenes were detected in shallow and deeper soil. Soil concentrations at this location are considered representative of soils beneath the footprint of the tank containment area.

Based on the empirical soil vapor data, we conclude that subarea soil concentrations protective of groundwater (i.e., to 10,000 mg/kg) are also protective of the soil-to-air pathway, in accordance with WAC 173-340-740(3)(b)(iii)(C)(III). Higher soil TPH concentrations in unsaturated soil within and immediately adjacent to the tank containment (Figure 11) are generating soil vapor TPH concentrations above unrestricted and industrial screening levels. However, where equally high soil TPH concentrations occur only at depth, below the water table, the soil vapor concentrations generated are below unrestricted screening levels (BC-VP04/BC-SB17 location).

The empirical soil vapor data demonstrate that the current TPH soil concentrations within the tank containment could pose a vapor intrusion risk to structures built over it in the future redevelopment, even if for industrial use. Away from the tank area, subarea soil and groundwater poses a negligible VI risk for an unrestricted site use. We conclude that the 10,000 mg/kg Method C TPH soil screening level and 3,100 mg/kg Method B TPH soil screening level are protective of soil vapor pathways for this subarea.

7.6.3 Contaminant Fate and Transport

7.6.3.1 Source Control

The Bunker C storage tank and surrounding concrete containment structure have been removed, but there has been no effort to date to remove petroleum-contaminated soil in this subarea. Removal of TPH-contaminated soil at the former Bunker C Tank location is being conducted as an interim action, in accordance with the August 2011 Amendment to the Agreed Order.

7.6.3.2 Attenuation/Transport Processes

Fate and transport of the primary petroleum COCs for the Bunker C Tank subarea – naphthalenes and cPAHs – is as described in Section 7.5.3 (Million Gallon Tanks subarea).

7.6.4 Exposure Pathways and Receptors

For future unrestricted use of the Bunker C Tank subarea, concentrations of the following petroleum hydrocarbons in soil exceed unrestricted soil screening levels:

- 10,000 mg/kg TPH based on protection of groundwater and vapor intrusion, and 3,100 mg/kg TPH based on direct contact;
- 0.14 mg/kg total cPAHs based on direct contact; and
- 1.6 mg/kg naphthalenes based on soil-to-groundwater-to-sediment pathway. However, the RI data empirically document an absence of naphthalene in subarea

groundwater, and no detectable naphthalene in soil vapor within the subarea, empirically demonstrating that naphthalene in subarea soil and groundwater does not pose an adverse risk to air or the marine environment.

For continued industrial use of the Bunker C Tank subarea, concentrations of the following petroleum hydrocarbons in soil exceed industrial soil screening levels:

- 10,000 mg/kg TPH based on protection of groundwater and vapor intrusion, and 38,000 mg/kg TPH based on direct contact;
- 0.31 mg/kg total cPAHs based on groundwater for protection of the marine environment (total cPAH concentrations are below 18 mg/kg direct contact screening level); and
- 1.6 mg/kg naphthalenes based on soil-to-groundwater-to-sediment pathway; however, empirical groundwater and soil vapor data indicate soil naphthalene concentrations are protective of those pathways.

cPAH groundwater concentrations at one well next to the former Bunker C Tank exceed the 0.02 µg/L screening level based on protection of the marine environment.

Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the Bunker C Tank subarea include:

- Residents or patrons contacting soil and/or inhaling dust contaminated by TPH and cPAHs; and
- Workers directly contacting TPH-contaminated soils and/or inhaling TPH-contaminated dust during excavation or other construction-related activities.

7.6.5 RI Conclusions for Bunker C Tank Subarea

Petroleum-saturated soils exist beneath the former Bunker C Tank and surrounding containment structure. Although the Bunker C residual has been weathered extensively, the soil TPH concentrations at this location are high enough that it may continue to generate mobile NAPL. There is a thin accumulation of free-phase LNAPL (free product) on the water table at monitoring well BC-MW01 located next to the former containment structure.

Under MTCA, free product must be removed to the extent practicable; however, in our professional judgment, the current condition does not pose an imminent threat to the Whatcom Waterway since soil TPH concentrations nearest the waterway appear to be below residual saturation (proposed 10,000 mg/kg, as outlined above) and PAH concentrations in groundwater nearest the Whatcom Waterway are protective of the marine environment. During our pre-RI and RI work in this subarea, we have not observed petroleum sheen on the Whatcom Waterway emanating from this area of the Site, and, to our knowledge, there are not reports from others indicating that such sheen is occurring. In addition, bioassay testing conducted on Whatcom Waterway sediment offshore from the Bunker C Tank subarea meets SQS biological criteria.

Based on the RI information, assessment of remedial alternatives for TPH and cPAHs in soil is warranted in the FS.

7.7 Acid Plant Subarea

7.7.1 Contaminants of Concern and Source

Metals and acidic groundwater pH are COCs for the Acid Plant subarea. The source for the COCs was the Acid Plant's historical production of sulfuric acid that was used in the Pulp Mill processes.

7.7.2 Nature and Extent of Contamination

Table 7-7A presents the pre-RI and RI metals, TPH, and conventionals data for Acid Plant subarea soil. Table 7-7B presents pre-RI and RI soil data for VOCs, SVOCs, and PCBs. Table 7-7C presents pre-RI and RI groundwater chemistry data for the subarea. Figure 7-7A presents the soil and 2009-2010 groundwater data for the Acid Plant subarea. The water table depth ranges from 5 to 8 feet below grade beneath the footprint of the former Acid Plant.

7.7.2.1 Soil

Based on data from RI boring AA-MW04, soils containing acidic pH and elevated total metals remain within the footprint of the former Acid Plant. Acidic soil pH, ranging from 3.9 to 5.0, was measured in each of the four samples collected to a depth of 12 feet from AA-MW04 (Table 7-7A). Concentrations of the metals arsenic, cadmium, copper, mercury, and lead in one or more samples of soil from AA-MW04 exceeded unrestricted soil screening levels. The soil screening levels for arsenic, cadmium, mercury, and copper are based on marine protection, which can be below and thus default to background; the lead screening level is based on unrestricted direct contact (250 mg/kg).

Arsenic and copper soil concentrations exceeding their stringent screening levels occur in the 1- to 2-foot and 8.5- to 9.5-foot samples, but are vertically bound by the 11- to 12-foot sample (Figure 7-7A). Detected cadmium concentrations exceeding the stringent 1 mg/kg screening level (up to 5.1 mg/kg) were detected in samples including the 11- to 12-foot sample (below water table), and are not vertically bounded. The lead exceedance (718 mg/kg) was detected in the 1- to 2-foot soil sample, and was vertically bounded by the next deeper sample. The shallow lead concentration is below the screening level for industrial soil direct contact (1,000 mg/kg) (Table 7-7A).

7.7.2.2 Groundwater

Acidic pH and concentrations of the dissolved metals arsenic, cadmium, copper, nickel, and zinc in Acid Plant subarea groundwater exceed groundwater screening levels. The dissolved metals and groundwater pH exceedances are limited to two wells: AA-MW04 located within the footprint of the former Acid Plant, and FH-MW01 located approximately 280 feet downgradient (north) of AA-MW04 (Figure 7-7A). The elevated dissolved metals occur only in wells with acidic pH, which keeps the metals in solution.

The most acidic groundwater measured during the RI occurs at well AA-MW04 (measured pH of 4.2 and 4.5; average 4.4). During the 2004 (pre-RI) sampling and analysis, a groundwater pH of 3.3 was measured at well GF-MW2 located about 75 feet northwest of AA-MW04. As a point of comparison, groundwater at well LB-MW1,

positioned upgradient of the former Acid Plant, has pH 6.8 and no dissolved metals exceedances (pre-RI or RI samples; Table 7-7C). During the 2009-2010 measurements, groundwater pH at well FH-MW01 ranged from 4.4 to 4.6 (average 4.5). This is an improvement from the pH 4.1 value measured at that well in 2004.

At well FH-MW01, concentrations of dissolved nickel and zinc detected in the Fall 2009 were lower than those detected in 2004, while the Spring 2010 concentrations were higher (Table 7-7C). Using the average of the 2009-2010 concentrations, dissolved nickel has declined (405 to 334 µg/L) while dissolved zinc has increased (760 to 873 µg/L) relative to 2004 data.

The extent of dissolved metals concentrations above screening levels is laterally bounded with the existing well network. Wells LB-MW01, AA-MW03, AA-MW01, and AA-MW02 respectively bound the southern (upgradient), western, northern (downgradient), and eastern extents of exceedance, as illustrated on Figure 7-7A[18]. Groundwater at well AA-MW03, northeast of the former Acid Plant, has acidic pH (average 5.0) but no dissolved metals exceedances. Well AA-MW01, located closest to the shoreline, is tidally influenced (see Figure 4-6), and tidal mixing occurring within the Fill Unit aquifer may be contributing to attenuation of low groundwater pH and associated dissolved metals concentrations as groundwater approaches the shoreline.

The RI data demonstrate a substantial attenuation of dissolved metals concentrations with distance downgradient from the Acid Plant source area – between wells AA-MW04 and FH-MW01. While five metals exceed groundwater screening levels at AA-MW04, only two (nickel and zinc) persist at concentrations above screening levels at FH-MW01 (Figure 7-7A). For each dissolved metal that exceeds its screening level in source area groundwater (AA-MW04), the percent concentration reduction occurring between AA-MW04 and FH-MW01 is tabulated below (using average of Fall 2009 and Spring 2010 data). With the exception of nickel, concentration reductions above 90 percent are observed over a groundwater flow distance of less than 300 feet. Based on the average 2009-2010 conditions, groundwater pH increases from 4.34 to 4.50 between the two wells, an increase of 32 percent.

Dissolved Metal with Exceedance at AA-MW04 (source area)	Percent Concentration Reduction between Wells AA-MW04 and FH-MW01
Arsenic	94
Cadmium	99.97
Copper	98
Nickel	60

[18] Note that well BC-MW02, within the Bunker C Tank subarea, is shown on Figure 8-7A since it was included in wells to be monitored for the Acid Plant subarea as part of the RI/FS Work Plan. The dissolved metals concentrations reported for BC-MW02 during the Fall 2009 groundwater sampling event were biased high as result of analytical interferences from the saline sample matrix, and are not considered representative of groundwater quality (refer to Section 7.6.2).

Zinc	98

Note: Analysis uses average concentrations from Fall 2009 and Spring 2010 monitoring events.

The data indicate that groundwater pH is buffering gradually downgradient of the acidic source area, resulting in natural attenuation of dissolved-phase metals in the aquifer.

7.7.3 Contaminant Fate and Transport

7.7.3.1 Source Control

The Acid Plant has been demolished, including removal of process equipment and storage tanks that likely contained acidic materials. Acidic, metals-containing soils beneath the former Acid Plant represent an ongoing source of acidity and leachable metals to groundwater. There has been no removal of this source material to date.

7.7.3.2 Attenuation/Transport Processes

Geochemical conditions, particularly ORP and pH, exert a strong influence on the speciation and mobility of metals, including those that are groundwater COCs for the Acid Plant subarea—arsenic, cadmium, copper, nickel, and zinc. Reducing groundwater conditions generally occur in the Fill Unit aquifer across the Site, including the Acid Plant subarea, which facilitates solubility and mobility of metals in groundwater. Superimposing the localized acidic pH from the former Acid Plant exacerbates the metals mobility in the subarea. Under moderately or highly oxidizing conditions, dissolved iron will be present as ferric iron and will form relatively insoluble oxide and oxyhydroxide compounds. Metals such as arsenic, cadmium, copper, lead, nickel, and zinc are strongly complexed with the iron oxides and oxyhydroxides, with near complete adsorption occurring at near-neutral pH values. The adsorbed metals are present as co-precipitants in the iron-containing minerals. In native aquifer materials exposed to reducing conditions and/or low pH, the ferric iron converts to the more soluble ferrous form. Dissolution of the iron-containing minerals under these conditions can result in the release and dissolution of co-precipitated metals. This has been identified as one of the major sources of naturally occurring arsenic in groundwater (Kelly et al., 2005), and is a probable mechanism that has resulted in observed concentrations of several metals in Acid Plant subarea groundwater.

The RI data indicate that dissolved metals concentrations attenuate naturally as groundwater pH increases with downgradient distance from the former Acid Plant. The rate of metals attenuation appears slow, based on comparison of RI data with that collected in 2004 from well FH-MW01.

7.7.4 Exposure Pathways and Receptors

Arsenic, cadmium, copper, mercury and lead concentrations are present in soil within the former Acid Plant footprint at concentrations above unrestricted soil screening levels based on groundwater protection or unrestricted direct contact; the concentrations are below soil screening levels for industrial direct contact. Concentrations of dissolved arsenic, cadmium, copper, nickel, and zinc in the Acid Plant subarea groundwater exceed groundwater screening levels based on marine protection.

Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the Acid Plant subarea include:

- Residents or patrons contacting soils and/or inhaling dust contaminated with metals;
- Aquatic ecological receptors becoming directly exposed to metals in marine sediment or water, if metals-contaminated groundwater continues migration and ultimately discharges to the Whatcom Waterway; and
- Humans consuming aquatic biota contaminated by discharges of dissolved metals to marine sediment and surface water, if metals-contaminated groundwater continues migration and ultimately discharges to the Whatcom Waterway.

7.7.5 RI Conclusions for Acid Plant Subarea

Based on the RI information, assessment of remedial alternatives for metals in the Acid Plant subarea soil and groundwater is warranted in the FS.

7.8 Lignin Plant LP-MW01 Subarea

7.8.1 Contaminants of Concern and Source

Chlorinated VOCs – PCE, TCE, and vinyl chloride (VC) – are COCs for groundwater at well LP-MW01 within the former Lignin Plant. Cis-1,2-dichloroethene (cis-1,2-DCE) is also detected in LP-MW01 groundwater but at concentrations below its screening level. There is no documented historical use of chlorinated solvents in the Pulp and Tissue Mill; however, based on the data, it appears likely that small quantities of PCE were used for degreasing purposes in the Lignin Plant.

7.8.2 Nature and Extent of Contamination

Tables 7-8A and 7-8B present the pre-RI and RI soil VOC and non-VOC chemistry data, respectively, for the Lignin Plant LP-MW01 subarea. Tables 7-8C and 7-8D present the groundwater VOC and non-VOC data, respectively, for the subarea. Figure 7-8A presents the soil and groundwater data for the COCs. The water table is locally present at depths in the range of about 2 to 4 feet below grade at LP-MW01.

7.8.2.1 Soil

The RI data indicate there is not a significant source of VOCs in soil around well LP-MW01. VOCs were not analyzed for in soil during the pre-RI drilling of well LP-MW01, so soil data are not available for it. Of the three COCs detected in LP-MW01 groundwater, only PCE was detected in soil around LP-MW01, and it was detected in only one of six borings completed during this RI (in 1- to 2-foot and 4- to 5-foot samples from LP-SB11). The detected PCE concentrations in the boring (0.020 and 0.081 mg/kg, respectively) are marginally above the 0.015 mg/kg unrestricted soil screening level for saturated soil, and below the 0.3 mg/kg screening level for unsaturated soil . The water table was observed at a depth of about 4.5 feet during drilling of SB-11, so the 4- to 5-foot sample contained both unsaturated and saturated soil. PCE was not detected in the deeper (8- to 9-foot) soil sample from boring SB-11.

The other three VOCs detected in LP-MW01 groundwater (TCE, cis-1,2-DCE, and VC) were not detected in the other 16 soil samples collected in the RI (Table 7-8A).

7.8.2.2 Groundwater

The data indicate that the VOC groundwater exceedance observed at LP-MW01 is localized. VOC concentrations in grab groundwater samples collected from the six soil borings advanced around LP-MW01 were below screening levels (Figure 7-8A). At LP-MW01:

- The detected PCE concentrations were 1.9 and 6.5 µg/L in the Fall 2009 and Spring 2010 samples, respectively; the 4.2 µg/L average concentration for the two samples is slightly above the 3.3 µg/L screening level based on marine protection. PCE concentrations are below a screening level for unrestricted vapor intrusion (23 µg/L); and
- The detected VC concentrations were 10 and 0.11 µg/L in the Fall 2009 and Spring 2010 samples, respectively; the 5.1 µg/L average concentration is above screening levels based on unrestricted vapor intrusion (0.5 µg/L, based on PQL), industrial vapor intrusion (3.5 µg/L), and marine protection (2.4 µg/L).

The lack of detectable VOCs in groundwater samples collected from downgradient locations LP-SB12 and LP-SB13 indicate the VOCs are not approaching the marine environment.

The 2009-2010 concentrations of COCs detected in groundwater from LP-MW01 are lower than measured in 2004. The current (2009 and 2010) data compare to the 2004 data as follows:

- PCE: 1.9 and 6.5 µg/L, compared to 25 µg/L in 2004; and
- VC: 10 and 0.1 (estimated) µg/L, compared to 13 µg/L in 2004.

While no longer COCs, TCE and cis-1,2-DCE concentrations have also declined from 2004 to 2009/2010: TCE declined from 5.4 to 1.2 and 0.3 µg/L, and cis-1,2-DCE declined from 12 to 5.7 and 0.27 (estimated) µg/L.

Geochemically reducing groundwater conditions were measured in well LP-MW01 in the 2004 and Fall 2009 groundwater sampling events, consistent with reducing conditions in the Fill Unit aquifer throughout most of the Site. However, oxidizing conditions were measured at LP-MW01 in Spring 2010 (3.1 mg/L DO and ORP of nearly +100 mV; Table 7-8C). On average, groundwater conditions are expected to be predominantly reducing throughout the Fill Unit Aquifer, including in the LP-MW01 area. These geochemical conditions are conducive to biological degradation of chlorinated solvent VOCs through reductive dechlorination. The presence of PCE with its degradation breakdown products TCE, cis-1,2-DCE, and VC, and the declines in the four compounds' concentrations over the past 6 years, indicate that reductive dechlorination of the COCs is occurring in the LP-MW01 subarea.

7.8.3 Contaminant Fate and Transport

7.8.3.1 Source Control

The source of chlorinated solvents at LP-MW01 is uncertain, but the RI data indicate only a limited source was present. Source control efforts have been limited to demolition and removal of most of the Lignin Plant.

7.8.3.2 Attenuation/Transport Processes

The chlorinated solvent COCs are relatively mobile in groundwater, with organic carbon-water partition coefficient (Koc) values ranging from about 19 to 265 L/kg (WAC 173-340-900, Table 747-1). Based on these Koc values, the COCs are expected to readily leach from soil and migrate with groundwater flow.

PCE, TCE, cis-1,2-DCE, and VC all biodegrade under anaerobic conditions, although the rate of VC anaerobic degradation is limited (Aronson and Howard, 1997). The chlorinated VOCs biodegrade via sequential reductive dechlorination, with PCE biodegrading to TCE, which biodegrades to cis-1,2-DCE, then VC, and, under optimal conditions, finally ethene. Based on the redox conditions at the Site, it is expected that reductive dechlorination of the COCs is occurring in the Fill Unit at/around well LP-MW01.

In contrast to the other chlorinated VOCs (PCE, TCE, and cis-1,2-DCE), VC will degrade more readily in oxidizing groundwater conditions. If the Fill Unit groundwater at LP-MW01 becomes more oxidizing during seasonal groundwater recharge, as suggested by the March 2010 data, it should enhance degradation of residual VC. Degradation of VC is indicated by concentration reductions observed since 2004.

The VOCs, whether sorbed to the soil matrix or dissolved in groundwater, also volatilize readily. Based on Henry's Law constants, the four chlorinated VOCs have different affinities to partition from groundwater to air; ordered from highest to lowest potential they are: VC, PCE, TCE, and cis-1,2-DCE.

7.8.4 Exposure Pathways and Receptors

PCE and VC are present in LP-MW01 groundwater at concentrations above screening levels for marine protection; the VC concentration also exceeds the screening level for vapor intrusion under either unrestricted or industrial land uses. Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the Lignin Plant LP-MW01 subarea include:

- Residents, patrons, and workers in buildings inhaling indoor air contaminated by the volatilization of VC from groundwater (vapor intrusion); and
- Humans consuming aquatic biota contaminated by VOC discharges to marine sediment and surface water, if VOC-contaminated groundwater continues migration and discharges to the Whatcom Waterway.

7.8.5 RI Conclusions for Lignin Plant LP-MW01 Subarea

Residual groundwater concentrations of PCE and VC in LP-MW01 exceed conservative screening levels based on marine protection and/or VI. However, the data from

explorations surrounding LP-MW01 indicate that the COCs are highly localized, and remain more than 1,000 feet from the Whatcom Waterway. Groundwater geochemical conditions are amenable to reductive dechlorination of the COCs, and reductions in COC concentrations are observed over the past 6 years, providing a weight of evidence that the COCs are attenuating naturally.

Based on the RI information, assessment of remedial alternatives for PCE and VC in Lignin Plant LP-MW01 subarea groundwater is warranted in the FS.

7.9 Miscellaneous Constituents across Site

7.9.1 Miscellaneous Dissolved Metals in Site Groundwater

7.9.1.1 Contaminants of Concern and Source

Based on the pre-RI data, the dissolved metals arsenic, copper, and nickel are COCs in groundwater at five monitoring wells located throughout the Pulp and Tissue Mill area. The locations of the wells are not associated with obvious sources for metals contamination in the Mill area. It is probable that Site-wide reducing groundwater conditions are enhancing mobility of naturally occurring metals in the Fill Unit aquifer. Superimposed upon the natural conditions, more highly reducing conditions occur in localized areas where biological degradation of organics contamination is likely occurring; we expect that these conditions further exacerbate metals mobility in the aquifer.

7.9.1.2 Nature and Extent of Contamination

Table 7-9A presents the pre-RI and RI groundwater chemistry data for the five wells with miscellaneous dissolved metals exceedances in pre-RI monitoring. Figure 7-9A depicts the well locations with dissolved metals and groundwater pH data from the 2009-2010 groundwater monitoring.

Groundwater

At four of the five wells (EMW-12S, EMW-16S, LP-MW01, and SC-MW02), the 2009-2010 detected concentrations of one or more of the dissolved metals arsenic, copper, and nickel exceed respective screening levels based on marine protection (Figure 7-9A). Well LW-MW01 had no detected dissolved metals exceedances. Groundwater pH at the five wells is moderate (range of 6.4 to 8.9), with no highly acidic or alkaline conditions observed. Notably, during the 2004 pre-RI groundwater sampling of well LW-MW01, a groundwater pH of 10.8 was measured; much reduced pHs (8.4 and 8.9) were measured during the 2009-2010 sampling. The reducing groundwater conditions are indicated from the negative ORP and the generally low dissolved oxygen (below 1 mg/L except in two measurements; Table 7-9A). Higher dissolved oxygen and ORP readings are observed in the Spring 2010 measurements for most wells, which, with groundwater temperatures cooler by 5.5 to 8.5°C, is likely indicative of more oxygen-rich groundwater recharge entering the Fill Unit at that time.

With detected exceedances in three of the five wells, copper is the most common dissolved metals exceedance: 4.4 µg/L in the Spring 2010 sample from LP-MW01, 4.8 µg/L in the Fall 2009 sample from SC-MW02, and 11 µg/L in the Fall 2009 sample from EMW-16S. However, copper concentrations exceeded the screening level in only one of two samples from each well, indicating seasonally variable concentrations. The higher

exceedance frequency for dissolved copper is also a function of its low screening level (3.1 µg/L). Well LP-MW01 had no other exceedances.

As discussed in Section 7.5, well EMW-16S is located within the area of groundwater petroleum contamination associated with the Million Gallon Tanks subarea; degradation of hydrocarbons in that area likely contributes to more highly reduced groundwater conditions that increase metals mobility. EMW-16S had the highest detected dissolved arsenic, copper, and nickel concentrations of the five miscellaneous wells sampled (15.7 µg/L arsenic, 11.1 µg/L copper, 23.9 µg/L nickel in Fall 2009 sample), but also showed the largest changes in dissolved metals concentrations seasonally, showing no metals exceedances in the Spring 2010 sample (Table 7-9A). Notably, hexavalent chromium was not detected in either sample collected from EMW-16S, confirming that the anomalous detection in the 2004 groundwater sample was an analytical artifact, as discussed in Aspect (2004b).

Well EMW-12S is also within the area of groundwater petroleum associated with the Million Gallon Tanks subarea, and it had the one dissolved arsenic exceedance detected in the five wells: 7.5 µg/L in the Fall 2009 sample, with the Spring 2010 concentration (4.1 µg/L) just below the screening level.

Well SC-MW02 had detected exceedances of dissolved copper (4.8 µg/L) and nickel (8.4 µg/L) in the Fall 2009 analysis, but no exceedances in the Spring 2010 sample.

Concentrations of other dissolved metals, below screening levels, were also generally lower in Spring 2010 than Fall 2009 (Table 7-9A).

Generally downgradient of wells LP-MW01, SC-MW02, and LW-MW01, wells LB-MW01, AA-MW02, and TS-MW01, monitored for characterization of the Acid Plant subarea, showed no dissolved metals exceedances during the RI monitoring (refer to Section 7.7). The downgradient data indicate that the metals exceedances observed at LP-MW01, SC-MW02, and LW-MW01 are not migrating to the Whatcom Waterway at concentrations of concern. There were no groundwater metals data collected from wells downgradient of well of EMW-12S to document the downgradient extent of metals exceedances.

7.9.1.3 Contaminant Fate and Transport

Source Control

The presence of petroleum or other organic contaminants undergoing biological degradation in the Fill Unit can create more highly reducing groundwater conditions that enhance mobilization of metals in the aquifer. This is likely the case at wells EMW-12S and EMW-16S where petroleum is present, and possibly at well LP-MW01 where VOCs are present. Therefore, efforts to control sources of organic contaminants can help mitigate more strongly reducing groundwater conditions and thus reduce metals mobility in those areas.

Attenuation/Transport Processes

Fate and transport processes pertinent to the dissolved metals occurring in the miscellaneous wells are described in the Attenuation/Transport Processes subsection within Section 7.7.3 (Acid Plant subarea).

7.9.1.4 Exposure Pathways and Receptors

Concentrations of dissolved arsenic, copper, and/or nickel in four of the five miscellaneous wells exceed groundwater screening levels based on marine protection; however, the exceedances are not high concentration or persistent seasonally, occurring in one of two samples analyzed from each well. Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathways and receptors for the Site include:

- Aquatic ecological receptors becoming directly exposed to metals in marine sediment or water, if elevated dissolved metals in groundwater continue migration and discharge to the Whatcom Waterway; and
- Humans consuming aquatic biota contaminated by discharges of dissolved metals to marine sediment and surface water, if dissolved metals in groundwater continue migration and discharge to the Whatcom Waterway.

7.9.1.5 RI Conclusions for Miscellaneous Groundwater Metals

We conclude that the low-level dissolved metals are not attributable to a specific metals source associated with historical Mill operations. Cleanup efforts to control sources of the organic contaminants (e.g., 2006 petroleum soil removal at Million Gallon Tanks) can help mitigate more highly reducing conditions and thus reduce metals mobility in those areas. Regardless, outside of those areas, the Fill Unit aquifer is relatively organic-rich (abundant dredge fill and wood) with naturally reducing groundwater conditions, such that dissolved metals can be naturally present at concentrations above the stringent screening levels applied in this RI.

The downgradient extent of groundwater metals exceedances is defined across most of the Site, except downgradient of EMW-12S. This will be addressed in the FS.

7.9.2 Dioxins/Furans in Site Soils

7.9.2.1 Contaminants of Concern and Source

The pre-RI data indicate dioxins/furans are present in soil at one location at concentrations above the unrestricted soil screening level but below the industrial soil screening level. Potential sources of the detected soil dioxins/furans are discussed in the context of the congener evaluation presented in a subsection below.

7.9.2.2 Nature and Extent of Contamination

As discussed in Aspect (2004b), dioxins and furans, expressed as a TCDD (TEQ) concentration in accordance with MTCA, were detected in two soil samples from pre-RI boring BH-SB02, located east of the Bag House, at concentrations exceeding the unrestricted soil screening level of 1.1×10^{-5} mg/kg, which is also protective of groundwater (Table 5-2). Sample BH-SB02-1, which was collected at a depth of 0 to 4 feet, contained a TCDD (TEQ) concentration of 2.2×10^{-5} mg/kg. Field duplicate samples collected at a depth of 4 to 8 feet (above water table) from the boring contained a TCDD (TEQ) concentration of 7.2×10^{-4} and 1.1×10^{-3} mg/kg (9.3×10^{-4} mg/kg average), which

is below the 1.5 x 10^{-3} mg/kg industrial soil screening level[19]. The sample contained plastic debris. The TCDD (TEQ) concentrations in the two soil samples analyzed from boring BH-SB01, located west of the Bag House, were below the unrestricted screening level.

To further assess the extent and range of dioxins/furans concentrations in soil across the Site, three additional soil samples were collected and analyzed for dioxins/furans during this RI. Table 7-9B presents the pre-RI and RI soil data for dioxins/furans, and Figure 7-9B illustrates the sample locations and corresponding data.

The detected concentrations in the three RI soil samples were relatively low, with two of three below the unrestricted soil screening level, as follows:

- A TCDD (TEQ) concentration of 2.5 x 10^{-6} mg/kg, below the unrestricted screening level, was detected at boring BC-SB05, located about 150 feet southeast of BH-SB02 within the Bunker C Tank subarea;
- A TCDD (TEQ) concentration of 5.9 x 10^{-6} mg/kg, below the unrestricted screening level, was detected at boring CP-MW03, located in the Caustic Plume subarea; and
- A TCDD (TEQ) concentration of 2.4 x 10^{-5}, above the unrestricted screening level, was detected at boring PR-MW01, located in the Laurel Street Pipe Rack subarea.

As observed in the pre-RI sample data, the detected TCDD (TEQ) concentrations in the RI soil samples are below the industrial soil direct contact and soil-to-groundwater pathway screening levels of 1.5 x 10^{-3} and 3.9 x 10^{-3} mg/kg, respectively (Table 5-3).

Dioxins and furans are ubiquitous in the environment at the sub-part-per-trillion concentrations (10^{-8} mg/kg) they are quantified to with current analytical techniques. There are a variety of potential sources for dioxin-like compounds in the environment, including burning of municipal, household, and medical waste, and municipal wastewater treatment sludge; wastewater discharges from bleached chlorine pulp and paper mills; air emissions from coal- and oil-fired power plants; emissions from manufacturing of a variety of chlorinated chemical compounds (e.g., chlorophenols, vinyl chloride); and gasoline and diesel vehicle emissions.

Ecology (1999) evaluated background concentrations in soils from areas designated as forest, open area, and urban area in eastern and western Washington. Using those data and based on the 2007 toxicity equivalency factor updates in MTCA, urban areas exhibited higher concentrations of dioxin-like compounds, with measured concentrations ranging from 7.3 x 10^{-7} to 2.1 x 10^{-5} mg/kg (90^{th} percentile of 9.9 x 10^{-6} mg/kg) as TCDD (TEQ), including non-detected congeners at half the detection limit. Forested and open areas had concentrations up to 6.6 x 10^{-6} mg/kg as TCDD (TEQ), and a 90^{th} percentile of 5.2 x 10^{-6} mg/kg. Based on this information, Ecology (2010a) has established the natural background TCDD (TEQ) concentration in upland soil at 5.2 x 10^{-6} mg/kg, for the purposes of cleanups under MTCA.

[19] Note that all TCDD (TEQ) concentrations discussed in this section were calculated using one-half the detection limit for individual congeners that were not detected.

The EPA (2006) estimated that typical background concentrations of TCDD (TEQ) in rural soil range from 1.0×10^{-7} to 6.0×10^{-6} mg/kg, and in urban soils range from 2.0×10^{-6} to 2.1×10^{-5} mg/kg (i.e., urban background soils can exceed the 1.1×10^{-5} mg/kg unrestricted soil screening level).

Concentrations of dioxins/furans in Bellingham urban background soils can also exceed the 1.1×10^{-5} mg/kg unrestricted soil screening level. Ecology and Environment (2002) collected ten background surface soil samples from depositional and high traffic areas at residences in a neighborhood located between about 0.5 and 1.5 miles north-northwest of the Site. Detected TCDD (TEQ) soil concentrations ranged from 1.5×10^{-6} to 3.5×10^{-5} mg/kg; three of the ten detections were above the 1.1×10^{-5} mg/kg unrestricted soil screening level[20]. That study also collected ten surface soil samples from open field background locations (primarily parks) in the same general area; however, Table 4-3 of Ecology and Environment (2002) does not report data for several of the individual congeners (including 2,3,7,8-TCDD) to allow calculation of TCDD (TEQ) concentrations in accordance with current MTCA protocols. The congener concentrations reported are generally somewhat lower than reported for the residential background samples.

Ecology has subsequently conducted sampling and analysis to document dioxins/furan concentrations in Seattle area urban soils (Ecology, 2011). In Ecology's 2011 study, 120 soil samples were collected from City of Seattle right-of-way properties within six Seattle neighborhoods. The soil samples were analyzed for dioxins/furans and for PAHs. Detected TCDD (TEQ) soil concentrations ranged from 1.7×10^{-6} to 1.1×10^{-4} mg/kg, with a 90^{th} percentile concentration of 4.6×10^{-5} mg/kg. The data indicate that typical urban soil concentrations of dioxins/furans in the Puget Sound region exceed the 1.1×10^{-5} mg/kg MTCA unrestricted soil cleanup level.

In summary, we conclude that, with the exception of subsurface soil at BH-SB02, detected TCDD (TEQ) concentrations in Site soils are within the range expected for urban soils.

Evaluation of Dioxin and Furan Congener Group Signatures

Evaluation of individual dioxin and furan congener groups in Site soil samples indicates that the relatively higher TCDD (TEQ) concentration in subsurface soil at BH-SB02 is likely associated with a different source than dioxins and furans detected in other soil samples across the Site.

Figure 7-9C depicts the relative proportion of dioxin and furan congener groups from six of the seven Site soil sample analyses. Sample BH-SB01-2 is not shown, since no furan or dioxin congeners were detected in the sample (Table 7-9B). The relative (percent) proportion of dioxin and furan congener groups in each soil sample was calculated by dividing the detected concentration for each congener group by the total detected concentration of dioxins and furans. Concentrations were not adjusted for toxic equivalency to TCDD, and non-detected congeners were included at half the associated detection limit for the calculation, in accordance with MTCA.

[20] The Oeser RI (Ecology and Environment, 2002) was prepared prior to Ecology's 2007 update to toxicity equivalency factors (TEFs) for dioxins/furans, and therefore applied different TEFs than MTCA now uses. Concentrations presented here use the current MTCA TEFs to calculate TCDD (TEQ) concentrations.

For comparison, the average congener concentrations for the residential and open field background soil samples collected north-northwest of the Site (Ecology and Environment, 2002) are also plotted on the figure. As stated above, some individual congener data were not reported for the open field background samples. Total congener group concentrations were reported (e.g., total TCDD, total PeCDD, etc.) for the samples, and these concentrations were used to calculate the relative proportion of each congener group for the open field background sample group.

With the exception of sample BH-SB02-2, the octa-chlorinated dioxin congener group (OCDD) comprises the majority of the total dioxin and furan concentrations in the Site soil samples, representing between about 54 and 85 percent of the total. The remainder is comprised of about 7 to 20 percent hepta-chlorinated dioxin congeners (HpCDD), and generally less than 5 to 7 percent hexa-chlorinated dioxin congeners (HxCDD) and hexa-, hepta-, and octa-chlorinated furan congener groups (HxCDF, HpCDF, and OCDF, respectively). The soil sample from CP-MW03 had somewhat higher percentages of penta-chlorinated furan congeners (PeCDF), HxCDF, and OCDF, but otherwise follows a similar pattern as the other samples.

The congener distribution for the five Site soil samples closely match that of the Bellingham urban background sample averages (87 and 56 percent OCDD in residential and open field background samples, respectively; Figure 7-9C), indicating the dioxin/furan sources for the majority of Site soils are the same as for elsewhere in the Bellingham urban environment.

However, the congener group distribution observed for the majority of Site soil samples contrasts with the distribution for the subsurface soil sample collected from the 4- to 8-foot depth at boring BH-SB02. The congener distribution for this sample, illustrated as a dashed line on Figure 7-9C, includes about 19 percent HxCDD, 40 percent HpCDD, and 35 percent OCDD, with less than about 2 percent of the remaining congener groups.

The congener group distributions for Site soil samples were compared to published average congener distributions for various sources (EPA, 2006). With the exception of the subsurface sample from BH-SB02, the congener group distributions in Site soils are generally consistent with a number of potential sources, including treated bleached pulp and paper mill wastewater effluent, oil-fired electrical generating facility air emissions, diesel truck exhaust, and/or forest fires. Each of these sources consist predominantly of OCDD, with less than 20 percent HpCDD, and less than 5 percent of the remaining congener groups. None of the published average congener group distributions were similar to the distribution observed in the subsurface soil sample from BH-SB02.

The congener group distribution for the subsurface sample from BH-SB02 was also compared to historical dioxin/furan data from wastewater and sediment samples collected by Ecology at the GP Pulp and Tissue Mill in 1993 (Ecology, 1994a). Ecology collected Mill wastewater influent and treated effluent samples from the ASB on the north side of Whatcom Waterway and a composite sediment sample from near the wastewater outfall diffuser in Bellingham Bay. Figure 7-9D presents the relative proportion of congener groups in the SB-BH02 subsurface soil sample and for the wastewater influent and sediment composite samples. Dioxin and furan congeners were not detected in the wastewater effluent, so the data are not shown on Figure 7-9D. The congener group

distributions from the wastewater influent and sediment composite samples more closely resemble the congener group distribution in the SB-BH02 subsurface sample than the other soil samples from the Site.

Based on concentrations and congener signatures, we conclude that the dioxin/furans in Site soils, excluding subsurface soil at BH-SB02, are typical of urban soils, and may be derived from one or more potential sources either on Site or off Site. The congener signature and higher concentration in the BH-SB02 subsurface soil sample are distinctly different from those detected elsewhere across the Site, and indicate a source likely associated with the debris material observed in that sample interval.

7.9.2.3 Contaminant Fate and Transport

Dioxins and furans are virtually immobile in soil, with a reported mean Koc for 2,3,7,8-TCDD in the range of 2.45×10^7 to 3.80×10^7 (log K_{oc} of 7.39 to 7.58; ATSDR, 1998). The lower end of this K_{oc} range is also cited in EPA's Technical Fact Sheet for 2,3,7,8-TCDD as part of their National Primary Drinking Water Regulations (www.epa.gov/ogwdw/pdfs/factsheets/soc/tech/dioxin.pdf). The EPA fact sheet further states: "If released to soil, TCDD is not expected to leach." and "Tests conducted by USDA determined that vertical movement of 2,3,7,8-TCDD did not occur in a wide range of soil types."

All detected TCDD (TEC) concentrations detected in Site soil are less than soil concentrations considered protective of groundwater. Based on these considerations, dioxins and furans in Site soils are not expected to leach from soil to groundwater. Dioxins and furans are also not volatile, so will not partition from soil into air at concentrations of concern.

7.9.2.4 Exposure Pathways and Receptors

TCDD (TEC) concentrations in soil exceed the unrestricted soil screening level based on direct contact at two locations: one boring (with samples at 2 depths) on the east side of the former Bag House within the Bunker C Tank subarea, and one boring in the Laurel Street Pipe Rack subarea. The detected soil TCDD (TEC) concentrations at both locations are below the industrial soil screening level, indicating that the soil direct contact exposure pathway is not complete for continued industrial use of the Site. The detected concentrations are below a soil concentration based on protection of leaching to groundwater, so leaching and groundwater migration to marine water is not a complete exposure pathway.

Assuming the full range of potential future land uses, and assuming no remedial action or protective control is in place, the current and future potentially complete exposure pathway and receptor are:

- Residents or patrons contacting soils and/or inhaling dust contaminated with dioxins and furans.

7.9.2.5 RI Conclusions for Dioxins/Furans in Site Soils

Based on the RI information, we conclude that dioxin/furans are present in soils throughout the Site at concentrations typical of urban conditions. However, the data identify an occurrence of debris-containing soil in the 4- to 8-foot-depth interval east of the former Bag House with TCDD (TEQ) concentrations an order of magnitude higher

than, and a congener signature different from, that observed for the other Site soils. The source of dioxins/furans in the debris-containing soil is interpreted to be from historical operations on the Site.

Based on the RI information, assessment of remedial alternatives for the debris-containing soil east of the Bag House (BH-SB02 location) is warranted in the FS. Away from this localized occurrence, the low-level dioxins/furan concentrations present throughout Site soils are likely representative of urban background conditions, not a Site release. In general, dioxins/furans in upland soil represent a potential risk only via soil direct contact, the same as cPAHs and lead, which are likewise present in scattered occurrences throughout Site soils at concentrations above unrestricted screening levels. The FS will address human and wildlife direct contact with soils Site-wide, and soil erosion Site-wide, which will address dioxins/furans in soils Site-wide, whether derived from the Site or not.

7.10 Areas Outside of Defined Subareas

The RI/FS Work Plan acknowledged that Site soil contains scattered concentrations of common urban contaminants at concentrations above unrestricted soil screening levels. Some of these contaminant occurrences are likely attributable to the Site's long-term industrial history (e.g. soil oil-range TPH above 2,000 mg/kg and lead above 81 mg/kg), whereas others may be attributable to the Site's location within an urban setting over the past century (e.g., metals above screening levels based on natural background (arsenic, cadmium, chromium, copper, nickel, zinc), total cPAH [TEQ] above 0.14 mg/kg, and TCDD [TEQ] above 0.000011 mg/kg).

Tables 7-10A and 7-10B present the collective pre-RI and RI soil and groundwater quality data for areas outside of the subareas. Figure 7-10 shows the soil sampling locations, with locations color coded for screening level exceedances.

7.11 Site-Wide Conceptual Site Model

Based on the collective information presented in this section, Figure 7-11 is a graphical depiction of the conceptual site model for the Site. The Site-wide conceptual site model is not specific to any one subarea or historical source of contamination. Rather, it illustrates generally the presence of contaminated soil, groundwater, and soil vapor, and the pathways by which human receptors (residents or workers) on the Site or ecological receptors in Bellingham Bay/Whatcom Waterway could be exposed to contamination if no remedial action or protective controls are put into place at the Site.

Table 7-X - Footnotes for Soil, Groundwater, and Soil Vapor Chemistry Data Tables in Section 7

GP West Site RI/FS 070188

Notes and Definitions for Soil Chemistry Tables:

Blank Cell - Not analyzed.

Concentrations within bold border indicate value exceeds Unrestricted Soil Screening Level.

Concentrations in shaded cells indicate value exceeds Industrial Soil Screening Level.

J - Analyte was positively identified. The reported result is an estimate.

U - Analyte was not detected at or above the reported detection limit.

UJ - Analyte was not detected at or above the reported estimated detection limit.

Notes and Definitions for Groundwater Chemistry Tables:

Blank Cell - Not analyzed.

Concentrations within bold border indicate value exceeds Groundwater Screening Level for Unrestricted Land Use.

Concentrations in shaded cells indicate value exceeds Groundwater Screening Level for Industrial Land Use.

J - Analyte was positively identified. The reported result is an estimate.

U - Analyte was not detected at or above the reported detection limit.

UJ - Analyte was not detected at or above the reported estimated detection limit.

R - Data rejected. Dissolved metals data for October 2009 groundwater sample from well BC-MW02 are not considered representative of groundwater quality due to salinity interferences in lab method (refer to text).

Notes and Definitions for Soil Vapor Chemistry Tables:

Blank Cell - Not analyzed.

Concentrations in shaded cells indicate value exceeds Air (Soil Vapor) Screening Level for Unrestricted Land Use.

Concentrations in shaded cells with bold italicized text indicate value exceeds Air (Soil Vapor) Screening Level for Industrial Land Use.

J - Analyte was positively identified. The reported result is an estimate.

U - Analyte was not detected at or above the reported detection limit.

UJ - Analyte was not detected at or above the reported estimated detection limit.

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
AS-01	AS-01SO-A	05/28/03	0 to 2.5 feet	***1.95***				
AS-01	AS-01SO-B	05/28/03	2.5 to 5 feet	***0.218***				
AS-01	AS-01SO-C	05/28/03	5 to 7.5 feet	***0.338***				
AS-01	AS-01SO-D	05/28/03	7.5 to 10 feet	0.045				
AS-02	AS-02SO-A	05/28/03	0 to 2.5 feet	***6.86***				
AS-02	AS-02SO-B	05/28/03	2.5 to 5 feet	***94.2***				
AS-02	AS-02SO-C	05/28/03	5 to 7.5 feet	***19.7***				
AS-02	AS-02SO-D	05/28/03	7.5 to 10 feet	***0.667***				
AS-03	AS-03SO-A	05/28/03	0 to 2.5 feet	***220***				
AS-03	AS-03SO-B	05/28/03	2.5 to 5 feet	***53.1***				
AS-03	AS-03SO-C	05/28/03	5 to 6 feet	***118***	0.087			
AS-04	AS-04SO-A	05/28/03	0 to 2.5 feet	***0.217***				
AS-04	AS-04SO-B	05/28/03	2.5 to 5 feet	0.065				
AS-04	AS-04SO-C	05/28/03	5 to 7.5 feet	0.063				
AS-04	AS-54SO-C	05/28/03	5 to 7.5 feet	0.064				
AS-04	AS-04SO-D	05/28/03	7.5 to 10 feet	***0.119***				
AS-16	AS-16SO-A	05/28/03	0 to 2.5 feet	***0.791***				
AS-16	AS-16SO-B	05/28/03	2.5 to 5 feet	***0.7***				
AS-16	AS-16SO-C	05/28/03	5 to 7.5 feet	0.098				
AS-16	AS-16SO-D	05/28/03	7.5 to 10 feet	0.066				
ATW-AB3	ATW-AB3-7-8	05/05/04	7 to 8 feet	0.02 U				
ATW-AB4	ATW-AB4-10.5-12	05/05/04	10.5 to 12 feet	0.07				
ATW-B3	ATW-B3-8.5-10	05/04/04	8.5 to 10 feet	0.02 U				
ATW-B4	ATW-B4-8.5-10	05/04/04	8.5 to 10 feet	0.09				
ATW-BC1	ATW-BC1-9-10.5	05/05/04	9 to 10.5 feet	0.04				
ATW-C1	ATW-C1-8.5-10	05/04/04	8.5 to 10 feet	0.06				
ATW-C2	ATW-C2-8.5-10	05/04/04	8.5 to 10 feet	0.02 U				
BK-03	BK-03-0-6	03/31/92	0 to 0.5 feet	***4.5***				
BT-I	BT-I-5-6.5	01/11/93	5 to 6.5 feet	***190***				
BT-I	BT-I-7.5-9	01/11/93	7.5 to 9 feet	***180***				
BT-I	BT-I-10-11.5	01/11/93	10 to 11.5 feet	***330***				0.0039
BT-I	BT-I-13.5-15	01/11/93	13.5 to 15 feet	***1.8***				
BT-II	BT-II-5-6.5	01/11/93	5 to 6.5 feet	***49***				
BT-II	BT-II-7.5-9	01/11/93	7.5 to 9 feet	***43***				
BT-II	BT-II-15-16.5	01/11/93	15 to 16.5 feet	***8.1***				
BT-III	BT-III-5-6.5	01/11/93	5 to 6.5 feet	***390***				
BT-III	BT-III-7.5-9	01/11/93	7.5 to 9 feet	***43***				
BT-III	BT-III-15-16.5	01/11/93	15 to 16.5 feet	***21***				
BT-IV	BT-IV-5-6.5	01/12/93	5 to 6.5 feet	***120***				0.0002 U
BT-IV	BT-IV-7.5-9	01/12/93	7.5 to 9 feet	***50***				
BT-IV	BT-IV-15-16.5	01/12/93	15 to 16.5 feet	***3.1***				
BT-IX	BT-IX-2.5-4	01/13/93	2.5 to 4 feet	***12***				
BT-IX	BT-IX-5-6.5	01/13/93	5 to 6.5 feet	***310***				
BT-IX	BT-IX-7.5-9	01/13/93	7.5 to 9 feet	***2.4***				
BT-IX	BT-IX-15-16.5	01/13/93	15 to 16.5 feet	***3.2***				
BT-V	BT-V-7.5-9	01/12/93	7.5 to 9 feet	***1.2***				
BT-V	BT-V-15-16.5	01/12/93	15 to 16.5 feet	***3.1***				
BT-VI	BT-VI-5-6.2	01/12/93	5 to 6.2 feet	***34***				
BT-VI	BT-VI-7.5-9	01/12/93	7.5 to 9 feet	***36***				
BT-VI	BT-VI-15-16.5	01/12/93	15 to 16.5 feet	***1.9***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
BT-VII	BT-VII-5-6.5	01/12/93	5 to 6.5 feet	***200***				
BT-VII	BT-VII-7.5-9	01/12/93	7.5 to 9 feet	***24***				
BT-VII	BT-VII-17-18.5	01/12/93	17 to 18.5 feet	***5.9***				
BT-VIII	BT-VIII-3.5-9	01/12/93	3.5 to 9 feet	***2.2***				
BT-VIII	BT-VIII-15-16.5	01/12/93	15 to 16.5 feet	***1.6***				
BT-X	BT-X-2.5-4	01/13/93	2.5 to 4 feet	***63***				
BT-X	BT-X-5-6.5	01/13/93	5 to 6.5 feet	***3.8***				
BT-X	BT-X-7.5-9	01/13/93	7.5 to 9 feet	***0.4***				
BT-X	BT-X-15-16.5	01/13/93	15 to 16.5 feet	***8.8***				
BT-XI	BT-XI-2.5-4	01/13/93	2.5 to 4 feet	***39***				
BT-XI	BT-XI-5-6.5	01/13/93	5 to 6.5 feet	***2500***				
BT-XI	BT-XI-7.5-9	01/13/93	7.5 to 9 feet	***12000***				0.048
BT-XI	BT-XI-10-11.5	01/13/93	10 to 11.5 feet	***39***				
BT-XI	BT-XI-15-16.5	01/13/93	15 to 16.5 feet	***23***				
BT-XII	BT-XII-5-5.5	01/13/93	5 to 5.5 feet	***6.2***				
BT-XII	BT-XII-5.5-6	01/13/93	5.5 to 6 feet	***200***				
CB-EW	CB-EW	04/01/93	0 to 1 feet	***65***				
CB-SW	CB-SW	04/01/93	0 to 1 feet	***34***				
CB-SW-04	CB-SW-04	04/01/93	0 to 1 feet	***16***				
ELL BUILDIN	CELL BUILDING	01/13/93	0.5 to 0.8 feet	***5200***				0.062
CP-DS01	CP-DS1-0-4	06/02/11	0 to 4 feet	***298***				0.00050
CP-DS01	CP-DS1-4-8	06/02/11	4 to 8 feet	***812***				0.00940
CP-DS01	CP-DS1-8-12	06/02/11	8 to 12 feet	***167***				0.00170
CP-DS02	CP-DS2-0-4	06/02/11	0 to 4 feet	***36.5***				0.00070
CP-DS02	CP-DS2-4-8	06/02/11	4 to 8 feet	***219***				0.00100 U
CP-DS02	CP-DS2-8-12	06/02/11	8 to 12 feet	***70.5***				0.00100 U
CP-DS03	CP-DS3-0-2	06/02/11	0 to 2 feet	***2020***				0.1110
CP-DS03	CP-DS3-0-2D	06/02/11	0 to 2 feet	***1080***				
CP-DS03	CP-DS3-0-2T	06/02/11	0 to 2 feet	***1300***				
CP-DS03	CP-DS3-2-4	06/02/11	2 to 4 feet	***145000***				0.1690
CP-DS03	CP-DS3-2-4D	06/02/11	2 to 4 feet	***165000***				
CP-DS03	CP-DS3-2-4T	06/02/11	2 to 4 feet	***136000***				
CP-DS03	CP-DS3-0-4	06/02/11	0 to 4 feet	***77000***				0.25300
CP-DS03	CP-DS3-0-4D	06/02/11	0 to 4 feet	***65300***				
CP-DS03	CP-DS3-0-4T	06/02/11	0 to 4 feet	***140000***				
CP-DS03	CP-DS3-4-8	06/02/11	4 to 8 feet	***35800***				0.04600
CP-DS03	CP-DS3-4-8D	06/02/11	4 to 8 feet	***61900***				
CP-DS03	CP-DS3-4-8T	06/02/11	4 to 8 feet	***49000***				
CP-DS03	CP-DS3-8-12	06/02/11	8 to 12 feet	***61300***				0.05150
CP-DS03	CP-DS3-8-12D	06/02/11	8 to 12 feet	***19000***				
CP-DS03	CP-DS3-8-12T	06/02/11	8 to 12 feet	***14600***				
CP-DS04	CP-DS4-0-4	06/02/11	0 to 4 feet	***197***				0.16700
CP-DS04	CP-DS4-4-8	06/02/11	4 to 8 feet	***318***				0.00920
CP-DS04	CP-DS4-8-12	06/02/11	8 to 12 feet	***30.5***				0.00100 U
CP-DS05	CP-DS5-0-4	06/02/11	0 to 4 feet	***484***				0.01220
CP-DS05	CP-DS5-4-6	06/02/11	4 to 6 feet	***6.650***				0.0010 U
CP-DS05	CP-DS5-6-8	06/02/11	6 to 8 feet	***6980***				0.7240
CP-DS05	CP-DS5-4-8	06/02/11	4 to 8 feet	***4760***				1.42
CP-DS05	CP-DS5-4-8D	06/02/11	4 to 8 feet	***6710***				
CP-DS05	CP-DS5-4-8T	06/02/11	4 to 8 feet	***5940***				
CP-DS05	CP-DS5-8-10	06/02/11	8 to 10 feet	***70100***				1.82
CP-DS05	CP-DS5-8-10D	06/02/11	8 to 10 feet	***134000***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
CP-DS05	CP-DS5-8-10T	06/02/11	8 to 10 feet	***104000***				
CP-DS05	CP-DS5-10-12	06/02/11	10 to 12 feet	***24700***				0.5000
CP-DS05	CP-DS5-10-12D	06/02/11	10 to 12 feet	***37500***				
CP-DS05	CP-DS5-10-12T	06/02/11	10 to 12 feet	***36300***				
CP-DS05	CP-DS5-8-12	06/02/11	8 to 12 feet	***114000***				0.81200
CP-DS05	CP-DS5-8-12D	06/02/11	8 to 12 feet	***82300***				
CP-DS05	CP-DS5-8-12T	06/02/11	8 to 12 feet	***80500***				
CP-DS06	CP-DS6-0-4	06/02/11	0 to 4 feet	***114***				0.22700
CP-DS06	CP-DS6-4-8	06/02/11	4 to 8 feet	***25.4***				0.00100 U
CP-DS06	CP-DS6-8-12	06/02/11	8 to 12 feet	***0.785***				0.00100 U
CP-DS07	CP-DS7-0-4	06/02/11	0 to 4 feet	***161***				0.02810
CP-DS07	CP-DS7-4-8	06/02/11	4 to 8 feet	***15.3***				0.00520
CP-DS07	CP-DS7-8-12	06/02/11	8 to 12 feet	***9.130***				0.01010
CP-DS08	CP-DS8-0-4	06/02/11	0 to 4 feet	***111***				0.02180
CP-DS08	CP-DS8-4-8	06/02/11	4 to 8 feet	***6.360***				0.00100 U
CP-DS08	CP-DS8-8-12	06/02/11	8 to 12 feet	***862***				0.00180
CP-MW01	CP-MW01-2-3	09/21/09	2 to 3 feet	0.022				
CP-MW01	CP-MW01-14-15	09/21/09	14 to 15 feet	0.044				
CP-MW02	CP-MW02-1.5-2.5	09/16/09	1.5 to 2.5 feet	0.038				
CP-MW02	CP-MW02-10-12	09/16/09	10 to 12 feet	0.064				
CP-MW04	CP-MW04-2.5-4	09/17/09	2.5 to 4 feet	***22***				
CP-MW04	CP-MW04-5-6.5	09/17/09	5 to 6.5 feet	***11.6***				
CP-MW04	CP-MW04-7.5-9	09/17/09	7.5 to 9 feet	***6.09***				
CP-MW04	CP-MW04-10-11.5	09/17/09	10 to 11.5 feet	***4.77***				
CP-MW04	CP-MW04-12.5-14	09/17/09	12.5 to 14 feet	***3.9***				
CP-MW04	CP-MW04-15-16.5	09/17/09	15 to 16.5 feet	***2.4***				
CP-MW04	CP-MW04-17.5-19	09/17/09	17.5 to 19 feet	***0.737***				
CP-MW04	CP-MW04-22-23	09/21/09	22 to 23 feet	***0.372***				
CP-MW04	CP-MW04-26-27	09/21/09	26 to 27 feet	0.029				
CP-MW04	CP-MW04-38-39	09/21/09	38 to 39 feet	0.01 J				
CP-MW04	CP-MW04-30-31	09/21/09	30 to 31 feet	0.017 J				
CP-MW04	CP-MW04-34-35	09/21/09	34 to 35 feet	0.017 J				
CP-MW06	CP-MW06-1-2	09/16/09	1 to 2 feet	***3.83***				
CP-MW06	CP-MW06-13-15	09/16/09	13 to 15 feet	0.072				
CP-MW13	CP-MW13-1-2	12/16/10	1 to 2 feet	***27.6***				
CP-MW13	CP-MW13-2-3	12/16/10	2 to 3 feet	***1.55***				
CP-MW13	CP-MW13-4-5	12/16/10	4 to 5 feet	***1.81***				
CP-MW13	CP-MW13-8-9	12/16/10	8 to 9 feet	***87.5***				
CP-MW13	CP-MW13-12-14	12/16/10	12 to 14 feet	***42.4***				
CP-MW13	CP-MW13-15-16	12/16/10	15 to 16 feet	***4.74***				
CP-MW14	FD-CP-31	12/21/10	5 to 6 feet	***4.74***				
CP-MW14	CP-MW14-3-4	12/21/10	3 to 4 feet	***8.76***				
CP-MW14	CP-MW14-5-6	12/21/10	5 to 6 feet	***4.76***				
CP-MW14	CP-MW14-8-9	12/21/10	8 to 9 feet	***0.276***				
CP-MW14	CP-MW14-14-15	12/21/10	14 to 15 feet	***9.68***				
CP-MW14	CP-MW14-17-18	12/21/10	17 to 18 feet	***0.899***				
CP-MW15	FD-CP-11	12/20/10	4 to 5 feet	***25500 J***				
CP-MW15	FD-CP-11D	12/20/10	4 to 5 feet	***16100***				
CP-MW15	FD-CP-11T	12/20/10	4 to 5 feet	***11200 J***				
CP-MW15	FD-CP-12	12/20/10	5 to 6 feet	***5390***				
CP-MW15	FD-CP-12D	12/20/10	5 to 6 feet	***5850***				
CP-MW15	FD-CP-12T	12/20/10	5 to 6 feet	***6460***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
CP-MW15	FD-CP-13	12/20/10	6 to 8 feet	***10300***				
CP-MW15	FD-CP-13D	12/20/10	6 to 8 feet	***8990***				
CP-MW15	FD-CP-13T	12/20/10	6 to 8 feet	***10800***				
CP-MW15	FD-CP-14	12/20/10	10 to 11 feet	***26.4***				
CP-MW15	CP-MW15-4-5	12/20/10	4 to 5 feet	***14500 J***				0.212
CP-MW15	CP-MW15-4-5D	12/20/10	4 to 5 feet	***20600***				
CP-MW15	CP-MW15-4-5T	12/20/10	4 to 5 feet	***11200***				
CP-MW15	CP-MW15-5-6	12/20/10	5 to 6 feet	***7180***				
CP-MW15	CP-MW15-5-6D	12/20/10	5 to 6 feet	***6990***				
CP-MW15	CP-MW15-5-6T	12/20/10	5 to 6 feet	***7140***				
CP-MW15	CP-MW15-6-8	12/20/10	6 to 8 feet	***7760***				
CP-MW15	CP-MW15-6-8D	12/20/10	6 to 8 feet	***12200***				
CP-MW15	CP-MW15-6-8T	12/20/10	6 to 8 feet	***10600***				
CP-MW15	CP-MW15-10-11	12/20/10	10 to 11 feet	***26.1***				
CP-MW15	CP-MW15-12-14	12/20/10	12 to 14 feet	***2.03***				
CP-MW15	FD-CP15	12/22/10	12 to 14 feet	***2.63***				
CP-MWA1	CP-MWA1-2-3	09/21/09	2 to 3 feet	0.022				
CP-MWA1	CP-MWA1-14-15	09/21/09	14 to 15 feet	***0.125***				
CP-MWA2	CP-MWA2-2-3	09/21/09	2 to 3 feet	0.024				
CP-MWA2	CP-MWA2-11-12	09/21/09	11 to 12 feet	0.018 J				
CP-MWA3	CP-MWA3-11-13	09/16/09	11 to 13 feet	0.02				
CP-MWB1	CP-MWB1-2-3	09/21/09	2 to 3 feet	0.03				
CP-MWB1	CP-MWB1-12.5-13.5	09/21/09	12.5 to 13.5 feet	0.082				
CP-MWB2	CP-MWB2-10-12	09/17/09	10 to 12 feet	0.016 J				
CP-MWB2	CP-MWB2-3-4	09/21/09	3 to 4 feet	***0.175***				
CP-MWB3	CP-MWB3-13-15	09/17/09	13 to 15 feet	0.026				
CP-MWC1	CP-MWC1-2-3	09/21/09	2 to 3 feet	0.026				
CP-MWC1	CP-MWC1-12-13	09/21/09	12 to 13 feet	0.088				
CP-MWC2	CP-MWC2-2-3	09/17/09	2 to 3 feet	0.021				
CP-MWC2	CP-MWC2-13-15	09/17/09	13 to 15 feet	0.037				
CP-MWC3	CP-MWC3-12-14	09/16/09	12 to 14 feet	0.023				
CP-SB02	CP-SB02-1-2	12/21/10	1 to 2 feet	***0.284***				
CP-SB02	CP-SB02-3-4	12/21/10	3 to 4 feet	***0.259***				
CP-SB02	CP-SB02-5-6	12/21/10	5 to 6 feet	***0.791***				
CP-SB02	CP-SB02-9-10	12/21/10	9 to 10 feet	***29.2***				
CP-SB02	CP-SB02-17-18	12/21/10	17 to 18 feet	0.036				
CP-SB03	FD-CP30	12/22/10	2 to 3 feet	***2.35 J***				
CP-SB03	CP-SB03-8-9	12/22/10	8 to 9 feet	***18.2***				
CP-SB03	CP-SB03-2-3	12/22/10	2 to 3 feet	***1.14 J***				
CP-SB03	CP-SB03-4-5	12/22/10	4 to 5 feet	***0.330***				
CP-SB03	CP-SB03-11.5-12	12/22/10	11.5 to 12 feet	***560***				
CP-SB04	CP-SB04-2-3	12/22/10	2 to 3 feet	***2.64***				
CP-SB04	CP-SB04-4-5	12/22/10	4 to 5 feet	***18.5***				
CP-SB04	CP-SB04-5-6	12/22/10	5 to 6 feet	***1.98***				
CP-SB05	FD-CP-16	12/21/10	12 to 14 feet	***7.71***				
CP-SB05	CP-SB05-1-2	12/21/10	1 to 2 feet	***3.16***				
CP-SB05	CP-SB05-3-4	12/21/10	3 to 4 feet	***3.22***				
CP-SB05	CP-SB05-4-5	12/21/10	4 to 5 feet	***5.51***				
CP-SB05	CP-SB05-8-9	12/21/10	8 to 9 feet	***22.6***				
CP-SB05	CP-SB05-12-14	12/21/10	12 to 14 feet	***6.09***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

				Mercury Speciation				
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
CP-SB06	FD-CP-17	12/21/10	6 to 8 feet	***51000 J***				
CP-SB06	CP-SB06-2-3	12/21/10	2 to 3 feet	***1430***				
CP-SB06	CP-SB06-4-5	12/21/10	4 to 5 feet	***197***				
CP-SB06	CP-SB06-5-6	12/21/10	5 to 6 feet	***5310***				
CP-SB06	CP-SB06-5-6D	12/21/10	5 to 6 feet	***5090***				
CP-SB06	CP-SB06-5-6T	12/21/10	5 to 6 feet	***7380***				
CP-SB06	CP-SB06-6-8	12/21/10	6 to 8 feet	***38700 J***				0.0429
CP-SB06	CP-SB06-6-8D	12/21/10	6 to 8 feet	***28900***				
CP-SB06	CP-SB06-6-8T	12/21/10	6 to 8 feet	***31800***				
CP-SB06	CP-SB06-19-20	12/21/10	19 to 20 feet	***3.51***				
CP-SB06A	CP-SB06A-10-15	02/02/11	10 to 15 feet	***14000***				
CP-SB07	CP-SB07-8-9	12/22/10	8 to 9 feet	***12.6***				
CP-SB07	CP-SB07-6.5-7.5	12/22/10	6.5 to 7.5 feet	***0.783***				
CP-SB07	CP-SB07-3-4	12/22/10	3 to 4 feet	***183***				
CP-SB07	CP-SB07-4-5	12/22/10	4 to 5 feet	***13.7***				
CP-SB08	CP-SB08-1-2	12/23/10	1 to 2 feet	0.049				
CP-SB08	CP-SB08-2-3	12/23/10	2 to 3 feet	***350***				
CP-SB08	CP-SB08-4-5	12/23/10	4 to 5 feet	***31.3***				
CP-SB08	CP-SB08-8-9	12/23/10	8 to 9 feet	***1.54***				
CP-SB08	CP-SB08-12-14	12/23/10	12 to 14 feet	***0.460***				
CP-SB09	FD-CP-20	12/21/10	12 to 14 feet	***0.128***				
CP-SB09	CP-SB09-2-3	12/21/10	2 to 3 feet	***0.281***				
CP-SB09	CP-SB09-4-5	12/21/10	4 to 5 feet	***0.219***				
CP-SB09	CP-SB09-5-6	12/21/10	5 to 6 feet	***0.552***				
CP-SB09	CP-SB09-8-9	12/21/10	8 to 9 feet	***0.749***				
CP-SB09	CP-SB09-12-14	12/21/10	12 to 14 feet	***0.126***				
CP-SB10	CP-SB10-14-15	12/22/10	14 to 15 feet	***0.882***				
CP-SB10	CP-SB10-5-6	12/22/10	5 to 6 feet	***64.4***				
CP-SB10	CP-SB10-6-7	12/22/10	6 to 7 feet	***2.79***				
CP-SB10	CP-SB10-8-9	12/22/10	8 to 9 feet	***0.220***				
CP-SB10	CP-SB10-12-13	12/22/10	12 to 13 feet	***0.760***				
CP-SB11	FD-CP-19	12/21/10	7 to 9 feet	***0.262***				
CP-SB11	CP-SB11-3-5	12/21/10	3 to 5 feet	***0.431***				
CP-SB11	CP-SB11-5-6	12/21/10	5 to 6 feet	***1.90***				
CP-SB11	CP-SB11-7-9	12/21/10	7 to 9 feet	***0.258***				
CP-SB11	CP-SB11-12-14	12/21/10	12 to 14 feet	***3.08***				
CP-SB11	CP-SB11-15-16	12/21/10	15 to 16 feet	***19.2***				
CP-SB12	FD-CP39	12/22/10	12 to 13 feet	***2.68***				
CP-SB12	CP-SB12-0.5-1	12/23/10	0.5 to 1 feet	***1.06***				
CP-SB12	CP-SB12-5-6	12/23/10	5 to 6 feet	***0.736***				
CP-SB12	CP-SB12-9-10	12/23/10	9 to 10 feet	***1.52***				
CP-SB12	CP-SB12-12-13	12/23/10	12 to 13 feet	***2.40***				
CP-SB12	CP-SB12-15-16	12/23/10	15 to 16 feet	***13.9***				
CP-SB13	FD-CP-18	12/21/10	8 to 9 feet	***0.216***				
CP-SB13	CP-SB13-2-4	12/21/10	2 to 4 feet	***463***				
CP-SB13	CP-SB13-5-6	12/21/10	5 to 6 feet	***6.53***				
CP-SB13	CP-SB13-8-9	12/21/10	8 to 9 feet	***0.262***				
CP-SB13	CP-SB13-12-13	12/21/10	12 to 13 feet	***0.777***				
CP-SB13	CP-SB13-15-16	12/21/10	15 to 16 feet	***2.79***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
CP-SB14	CP-SB14-1-2	01/31/11	1 to 2 feet	***1.42***				
CP-SB14	CP-SB14-2-3	01/31/11	2 to 3 feet	***0.949***				
CP-SB14	CP-SB14-4-5	01/31/11	4 to 5 feet	***1630***				
CP-SB14	CP-SB14-6-7	01/31/11	6 to 7 feet	***7940***				
CP-SB14	CP-SB14-8-9	01/31/11	8 to 9 feet	***61.9***				
CP-SB14	CP-SB14-10-11	01/31/11	10 to 11 feet	***423***				
CP-SB15	CP-SB15-2-3	01/31/11	2 to 3 feet	***424***				
CP-SB15	CP-SB15-4-5	01/31/11	4 to 5 feet	***45.8***				
CP-SB15	CP-SB15-6-7	01/31/11	6 to 7 feet	***18.1***				
CP-SB15	CP-SB15-8-9	01/31/11	8 to 9 feet	***25.1***				
CP-SB15	CP-SB15-11-12	01/31/11	11 to 12 feet	***2.520***				
CP-SB16	FD-CP-100	01/31/11	5 to 6 feet	***0.987***				
CP-SB16	CP-SB16-3-4	02/01/11	3 to 4 feet	***1220***				
CP-SB16	CP-SB16-5-6	02/01/11	5 to 6 feet	***777***				
CP-SB16	CP-SB16-7-8	02/01/11	7 to 8 feet	***18.7***				
CP-SB16	CP-SB16-9-10	02/01/11	9 to 10 feet	***1.54***				
CP-SB16	CP-SB16-11-12	02/01/11	11 to 12 feet	***0.310***				
CP-SB17	CP-SB17-2-3	01/31/11	2 to 3 feet	***1.170***				
CP-SB17	CP-SB17-4-5	01/31/11	4 to 5 feet	***118***				
CP-SB17	CP-SB17-6.7-7.5	01/31/11	6.7 to 7.5 feet	***382***				
CP-SB17	CP-SB17-9-10	01/31/11	9 to 10 feet	***19.5***				
CP-SB17	CP-SB17-14-15	01/31/11	14 to 15 feet	***27.8***				
CP-SB17	FD-CP-102	02/01/11	2 to 3 feet	***531***				
CP-SB18	CP-SB18-12-13	02/01/11	12 to 13 feet	***1.16***				
CP-SB18	CP-SB18-0.5-1.5	02/01/11	0.5 to 1.5 feet	***0.475***				
CP-SB18	CP-SB18-5-6	02/01/11	5 to 6 feet	***191***				
CP-SB18	CP-SB18-7-8	02/01/11	7 to 8 feet	***4.43***				
CP-SB18	CP-SB18-9-10	02/01/11	9 to 10 feet	***0.383***				
CP-SB19	CP-SB19-0.5-1.5	01/31/11	0.5 to 1.5 feet	***620***				
CP-SB19	CP-SB19-2-3	01/31/11	2 to 3 feet	***0.137***				
CP-SB19	CP-SB19-4-5	01/31/11	4 to 5 feet	***0.174***				
CP-SB19	CP-SB19-9-10	01/31/11	9 to 10 feet	***0.152***				
CP-SB19	CP-SB19-15-16	01/31/11	15 to 16 feet	***3.320***				
CP-SB19	CP-SB19-6.5-7.5	02/01/11	6.5 to 7.5 feet	***0.296***				
CP-SB20	CP-SB20-0.5-1.5	01/31/11	0.5 to 1.5 feet	***64.4***				
CP-SB20	CP-SB20-3-4	01/31/11	3 to 4 feet	***3.02***				
CP-SB20	CP-SB20-5-6	01/31/11	5 to 6 feet	***9.16***				
CP-SB20	CP-SB20-9-10	01/31/11	9 to 10 feet	***0.485***				
CP-SB20	CP-SB20-13-14	01/31/11	13 to 14 feet	***0.272***				
CP-SB22	FD-CP-101	01/31/11	6 to 7 feet	***17.9***				
CP-SB22	CP-SB22-2-3	01/31/11	2 to 3 feet	***2.740***				
CP-SB22	CP-SB22-4-5	01/31/11	4 to 5 feet	***4.320***				
CP-SB22	CP-SB22-6-7	01/31/11	6 to 7 feet	***18.7***				
EHA-1	EHA-1-060393	06/03/93	0 to 0.5 feet	***3.8***				
EHA-2	EHA-2-060393	06/03/93	0 to 0.5 feet	***12***				
EHA-3	EHA-3-060393	06/03/93	0 to 0.5 feet	***2.5***				
EHA-4	EHA-4-060393	06/03/93	0 to 0.5 feet	***12***				
EHA-5	EHA-5-060393	06/03/93	0 to 0.5 feet	***6.1***				
EMW-14S	EMW-14S-5	11/24/93	5 to 6.5 feet	***3.6***				
EMW-14S	EMW-14S-10	11/24/93	10 to 11.5 feet	***160***				
EMW-14S	EMW-14S-16	11/24/93	16 to 17.5 feet	***47***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
EMW-15S	EMW-15S-5	11/24/93	5 to 6.5 feet	***2.6***				
EMW-1S	EMW-1S-05	06/04/93	5 to 6.5 feet	0.14 U				
EMW-1S	6-4-10	06/04/93	10 to 11.5 feet	0.12 U				
EMW-1S	EMW-1S-10	06/04/93	10 to 11.5 feet	0.12 U				
EMW-1S	EMW-1S-12	06/04/93	12 to 13.5 feet	***0.51***				
EMW-28D	EMW-28D-08	06/10/93	8 to 9.5 feet	***2.3***				
EMW-28D	EMW-28D-18	06/10/93	18 to 19.5 feet	0.13 U	0.000004	0.00002 U	0.0417	
EMW-28D	EMW-28D-28	06/10/93	28 to 29.5 feet	0.12 U	0.000007	0.00002 U	0.0407	
EMW-28D	EMW-28D-44	06/10/93	44 to 45.5 feet	0.1 U				
EMW-2S	EMW-2S-05	06/03/93	5 to 6.5 feet	***4.2***				0.0002
EMW-2S	EMW-2S-10	06/03/93	10 to 11.5 feet	***2.1***				
EMW-2S	EMW-2S-14	06/03/93	14 to 15.5 feet	***4.5***				
EMW-4S	EMW-4S-05	06/02/93	5 to 6.5 feet	***0.15***				
EMW-4S	EMW-4S-10	06/02/93	10 to 11.5 feet	***3.6***				
EMW-4S	EMW-4S-15	06/02/93	15 to 16.5 feet	0.34 U				
ESB-14S	ESB-14S-05	06/03/93	5 to 6.5 feet	***0.60***				
ESB-14S	ESB-14S-10	06/03/93	10 to 11.5 feet	***200***				0.027
ESB-14S	ESB-14S-22	06/03/93	22 to 23.5 feet	0.13 U				
ESB-15S	ESB-15S-05	06/03/93	5 to 6.5 feet	0.11 U				
ESB-15S	ESB-15S-10	06/03/93	10 to 11.5 feet	***56***				0.0089
ESB-15S	ESB-15S-22	06/03/93	22 to 23.5 feet	***0.23***				
ESB-17S	ESB-17S-07	06/01/93	7 to 8.5 feet	***0.37***				
ESB-17S	ESB-17S-11	06/01/93	11 to 12.5 feet	***0.14***	0.001837	0.0015	***1.53***	
ESB-17S	ESB-17S-20	06/01/93	20 to 21.5 feet	***1.1***				
FM1	FM-1	01/01/99	0 to 1 feet	***17***				
FM2	FM-2	01/01/99	0 to 1 feet	***12***				
HA-1	HA-1-0-6	03/30/92	0 to 0.5 feet	***29***				
HA-1	HA-1-18-24	03/30/92	1.5 to 2 feet	***0.74***				
HA-10	HA-10-0-6	03/31/92	0 to 0.5 feet	***3400***				
HA-10	HA-10-18-24	03/31/92	1.5 to 2 feet	***410***				
HA-10	HA-10-36-42	03/31/92	3 to 3.5 feet	***290***				
HA-11	HA-11-0-6	03/31/92	0 to 0.5 feet	***1.5***				
HA-11	HA-11-18-24	03/31/92	1.5 to 2 feet	***1.4***				
HA-11	HA-11-36-42	03/31/92	3 to 3.5 feet	***0.61***				
HA-12	HA-12-0-6	03/31/92	0 to 0.5 feet	***4.9***				
HA-12	HA-12-18-24	03/31/92	1.5 to 2 feet	***1.3***				
HA-12	HA-12-34-36	03/31/92	2.83 to 3 feet	***1.6***				
HA-13	HA-13-0-6	03/31/92	0 to 0.5 feet	***0.68***				
HA-13	HA-13-18-24	03/31/92	1.5 to 2 feet	***0.12***				
HA-13	HA-13-34-36	03/31/92	2.83 to 3 feet	0.1 U				
HA-14	HA-14-0-6	03/30/92	0 to 0.5 feet	***6***				
HA-14	HA-14-18-24	03/30/92	1.5 to 2 feet	***2.4***				
HA-14	HA-14-36-42	03/30/92	3 to 3.5 feet	***0.36***				
HA-15	HA-15-0-6	03/30/92	0 to 0.5 feet	***15***				
HA-15	HA-15-18-24	03/30/92	1.5 to 2 feet	0.1 U				
HA-15	HA-15-36-42	03/30/92	3 to 3.5 feet	0.1 U				
HA-16	HA-16-0-6	03/31/92	0 to 0.5 feet	***180***				
HA-16	HA-16-18-24	03/31/92	1.5 to 2 feet	***300***				
HA-16	HA-16-36-42	03/31/92	3 to 3.5 feet	***62***				
HA-2	HA-2-0-6	03/30/92	0 to 0.5 feet	***230***				
HA-2	HA-2-18-24	03/30/92	1.5 to 2 feet	***41***				
HA-2	HA-2-36-42	03/30/92	3 to 3.5 feet	***43***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

				Mercury Speciation				
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
HA-3	HA-3-0-6	03/30/92	0 to 0.5 feet	***140***				
HA-3	HA-3-18-24	03/30/92	1.5 to 2 feet	***100***				
HA-3	HA-3-36-42	03/30/92	3 to 3.5 feet	***65***				
HA-4	HA-4-0-6	03/30/92	0 to 0.5 feet	***32***				
HA-4	HA-4-18-24	03/30/92	1.5 to 2 feet	***100***				
HA-4	HA-4-36-42	03/30/92	3 to 3.5 feet	***63***				
HA-5	HA-5-0-6	03/31/92	0 to 0.5 feet	***4000***				
HA-5	HA-5-18-24	03/31/92	1.5 to 2 feet	***29***				
HA-5	HA-5-37-39	03/31/92	3.08 to 3.25 feet	***530***				
HA-6	HA-6-0-6	03/30/92	0 to 0.5 feet	***740***				
HA-6	HA-6-18-24	03/30/92	1.5 to 2 feet	***1.3***				
HA-6	HA-6-36-42	03/30/92	3 to 3.5 feet	***0.14***				
HA-7	HA-7-0-6	03/30/92	0 to 0.5 feet	***39***				
HA-7	HA-7-18-20	03/30/92	1.5 to 1.67 feet	***17***				
HA-8	HA-8-0-6	03/30/92	0 to 0.5 feet	***13***				
HA-8	HA-8-18-24	03/30/92	1.5 to 2 feet	***0.14***				
HA-9	HA-9-0-6	03/31/92	0 to 0.5 feet	***300***				
HA-9	HA-9-18-24	03/31/92	1.5 to 2 feet	***2.7***				
HA-9	HA-9-36-42	03/31/92	3 to 3.5 feet	***1.6***				
P10-SB01	P10-SB01-1	07/22/04	0 to 4 feet	0.08				
P10-SB01	P10-SB01-2	07/22/04	4 to 8 feet	***0.23***				
PL	PL	01/01/99	0 to 1 feet	1 U				
SITE-1	SITE-1-GP-CP-EX	07/01/98	0 to 0.5 feet	***38***				0.0005
SITE-2	SITE-2-GP-CP-EX	07/01/98	0 to 0.5 feet	***42***				0.0001 U
SITE-7	SITE-7-GP-CP-EX	07/01/98	0 to 0.5 feet	***18***				0.0001 U
SITE-8	SITE-8-GP-CP-EX	07/01/98	0 to 0.5 feet	***119***				0.0005
STB-03	STB-03-3.5-5	05/12/92	3.5 to 5 feet	***0.2***				
STB-03	STB-03-7.5-9	05/12/92	7.5 to 9 feet	***4.4***				
STB-03	STB-03-11.5-13	05/12/92	11.5 to 13 feet	***39***				
STB-04	STB-04-3.5-5	05/12/92	3.5 to 5 feet	***3.1***				
STB-04	STB-04-7.5-9	05/12/92	7.5 to 9 feet	0.1 U				
STB-05	STB-05-0-1.5	05/12/92	0 to 1.5 feet	***0.3***				
STB-05	STB-05-3.5-5	05/12/92	3.5 to 5 feet	***0.4***				
STB-05	STB-05-7.5-9	05/12/92	7.5 to 9 feet	***0.2***				
STB-07	STB-07-0-1.5	05/13/92	0 to 1.5 feet	0.1 U				
STB-07	STB-07-3.5-5	05/13/92	3.5 to 5 feet	0.1 U				
STB-07	STB-07-5-6.5	05/13/92	5 to 6.5 feet	***0.4***				
STB-08	STB-08-0-1.5	05/13/92	0 to 1.5 feet	0.1 U				
STB-08	STB-08-3.5-5	05/13/92	3.5 to 5 feet	***2.0***				
STB-08	STB-08-7.5-9	05/13/92	7.5 to 9 feet	***0.3***				
STB-09	STB-09-0-1.5	05/13/92	0 to 1.5 feet	***0.2***				
STB-09	STB-09-3.5-5	05/13/92	3.5 to 5 feet	0.1				
STB-09	STB-09-7.5-9	05/13/92	7.5 to 9 feet	***7.3***				
STB-10	STB-10-0-1.5	05/14/92	0 to 1.5 feet	***0.8***				
STB-10	STB-10-3.5-5	05/14/92	3.5 to 5 feet	0.1 U				
STB-10	STB-10-7.5-9	05/14/92	7.5 to 9 feet	***1.3***				
STB-11	STB-11-1-2.5	05/14/92	1 to 2.5 feet	***23***				
STB-11	STB-11-3.5-5	05/14/92	3.5 to 5 feet	***84***				
STB-11	STB-11-7.5-9	05/14/92	7.5 to 9 feet	***33000***				
STB-13	STB-13-5-6.5	05/14/92	5 to 6.5 feet	***1.1***				

Table 7-1A - Soil Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
STB-14	STB-14-3.5-5	05/15/92	3.5 to 5 feet	***1.7***				
STB-14	STB-14-7.5-9	05/15/92	7.5 to 9 feet	***7.8***				
STB-14	STB-14-10.5-12	05/15/92	10.5 to 12 feet	***0.5***				
STB-14	STB-14-15-16.5	05/15/92	15 to 16.5 feet	0.1 U				
STB-16	STB-16-0.5-2	05/15/92	0.5 to 2 feet	***0.7***				
STB-16	STB-16-3.5-5	05/15/92	3.5 to 5 feet	***15***				
STB-16	STB-16-7.5-9	05/15/92	7.5 to 9 feet	***47***				
STB-17	STB-17-0.5-2	05/15/92	0.5 to 2 feet	0.1 U				
STB-17	STB-17-3.5-5	05/15/92	3.5 to 5 feet	***0.7***				
STB-17	STB-17-7.5-9	05/15/92	7.5 to 9 feet	***37***				
STB-18	STB-18-0-1.5	05/15/92	0 to 1.5 feet	***85***				
STB-18	STB-18-3.5-5	05/15/92	3.5 to 5 feet	***0.7***				
STB-18	STB-18-7.5-9	05/15/92	7.5 to 9 feet	0.1				
STB-19	STB-19-0-1.5	05/17/92	0 to 1.5 feet	0.1 U				
STB-19	STB-19-3.5-5	05/17/92	3.5 to 5 feet	0.1 U				
STB-19	STB-19-7.5-9	05/17/92	7.5 to 9 feet	***0.5***				
STB-20	STB-20-0-1.5	05/17/92	0 to 1.5 feet	0.1 U				
STB-20	STB-20-3.5-5	05/17/92	3.5 to 5 feet	***0.2***				
STB-20	STB-20-7.5-9	05/17/92	7.5 to 9 feet	0.1 U				
STB-21	STB-21-0-1.5	05/17/92	0 to 1.5 feet	***1.0***				
STB-21	STB-21-3.5-5	05/17/92	3.5 to 5 feet	***3.0***				
STB-22	STB-22-0-1.5	05/17/92	0 to 1.5 feet	***0.7***				
STB-22	STB-22-3.5-5	05/17/92	3.5 to 5 feet	0.1				
STB-22	STB-22-7.5-9	05/17/92	7.5 to 9 feet	***0.4***				
STB-23	STB-23-0-1.5	05/17/92	0 to 1.5 feet	***0.5***				
STB-23	STB-23-3.5-5	05/17/92	3.5 to 5 feet	0.1 U				
STB-23	STB-23-7.5-9	05/17/92	7.5 to 9 feet	0.1				
STB-24	STB-24-0-1.5	05/18/92	0 to 1.5 feet	***0.2***				
STB-24	STB-24-3.5-5	05/18/92	3.5 to 5 feet	0.1 U				
STB-24	STB-24-7.5-9	05/18/92	7.5 to 9 feet	***1.3***				
STB-25	STB-25-0-1.5	05/18/92	0 to 1.5 feet	0.1 U				
STB-25	STB-25-3.5-5	05/18/92	3.5 to 5 feet	0.1 U				
STB-25	STB-25-7.5-9	05/18/92	7.5 to 9 feet	***1.3***				

Table 7-1B - Soil Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	CP-DS01 (0-4 ft) 6/2/11 RI	CP-DS01 (4-8 ft) 6/2/11 RI	CP-DS01 (8-12 ft) 6/2/11 RI	CP-DS02 (0-4 ft) 6/2/11 RI	CP-DS02 (4-8 ft) 6/2/11 RI	CP-DS02 (8-12 ft) 6/2/11 RI	CP-DS03 (0-4 ft) 6/2/11 RI	CP-DS03 (4-8 ft) 6/2/11 RI
Total Petroleum Hydrocarbons (TPH)										
Diesel Range Hydrocarbons in mg/kg	2,000	2,000								
Oil Range Hydrocarbons in mg/kg	2,000	2,000								
Total TPHs in mg/kg	2,000	2,000								
Heavy Metals										
Arsenic in mg/kg	7	7		4.5						
Cadmium in mg/kg	1	1		0.23						
Chromium (Total) in mg/kg	260	260		24.7						
Copper in mg/kg	36	36								
Lead in mg/kg	81	81		16						
Nickel in mg/kg	48	48								
Selenium in mg/kg	1	1		2.4 U						
Silver in mg/kg	0.02	0.02		0.1 J						
Zinc in mg/kg	85	85								
TCLP Metals										
Total Arsenic in mg/L	5	5		0.10 U						
Total Cadmium in mg/L	1	1		0.010 U						
Total Chromium (Total) in mg/L	5	5		0.005 J						
Total Lead in mg/L	5	5		0.05 U						
Total Selenium in mg/L	1	1		0.10 U						
Total Silver in mg/L	5	5		0.020 U						
Total Barium in mg/L	100	100		0.464 J						
Conventional Chemistry Parameters (including other metals)										
Barium in mg/kg	16,000	700,000		59.3						
Chloride in mg/kg										
pH in ph units	2.5 - 11	2.5 - 11	10.1	10.9	10.4	10.5	9.65	11.2	11.7	11.4
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-1B - Soil Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	CP-DS03 (8-12 ft) 6/2/11 RI	CP-DS04 (0-4 ft) 6/2/11 RI	CP-DS04 (4-8 ft) 6/2/11 RI	CP-DS04 (8-12 ft) 6/2/11 RI	CP-DS05 (0-4 ft) 6/2/11 RI	CP-DS05 FD (4-8 ft) 6/2/11 RI	CP-DS05 (4-8 ft) 6/2/11 RI	CP-DS05 (8-12 ft) 6/2/11 RI
Total Petroleum Hydrocarbons (TPH)										
Diesel Range Hydrocarbons in mg/kg	2,000	2,000								
Oil Range Hydrocarbons in mg/kg	2,000	2,000								
Total TPHs in mg/kg	2,000	2,000								
Heavy Metals										
Arsenic in mg/kg	7	7						3.4	2.4	
Cadmium in mg/kg	1	1						0.25	0.29	
Chromium (Total) in mg/kg	260	260						35.1	26.1	
Copper in mg/kg	36	36								
Lead in mg/kg	81	81						9.3	7.4	
Nickel in mg/kg	48	48								
Selenium in mg/kg	1	1						4.5 U	4.5 U	
Silver in mg/kg	0.02	0.02						0.6 U	0.6 U	
Zinc in mg/kg	85	85								
TCLP Metals										
Total Arsenic in mg/L	5	5						0.01 J	0.02 J	
Total Cadmium in mg/L	1	1						0.010 U	0.010 U	
Total Chromium (Total) in mg/L	5	5						0.019	0.022	
Total Lead in mg/L	5	5						0.05 U	0.05 U	
Total Selenium in mg/L	1	1						0.10 U	0.10 U	
Total Silver in mg/L	5	5						0.020 U	0.020 U	
Total Barium in mg/L	100	100						0.786 J	0.836 J	
Conventional Chemistry Parameters (including other metals)										
Barium in mg/kg	16,000	700,000						79.0	58.6	
Chloride in mg/kg										
pH in ph units	2.5 - 11	2.5 - 11	10.4	11.4	10.8	9.48	9.94		10.6	9.76
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-1B - Soil Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	CP-DS06 (0-4 ft) 6/2/11 RI	CP-DS06 (4-8 ft) 6/2/11 RI	CP-DS06 (8-12 ft) 6/2/11 RI	CP-DS07 (0-4 ft) 6/2/11 RI	CP-DS07 (4-8 ft) 6/2/11 RI	CP-DS07 (8-12 ft) 6/2/11 RI	CP-DS08 (0-4 ft) 6/2/11 RI	CP-DS08 (4-8 ft) 6/2/11 RI
Total Petroleum Hydrocarbons (TPH)										
Diesel Range Hydrocarbons in mg/kg	2,000	2,000								
Oil Range Hydrocarbons in mg/kg	2,000	2,000								
Total TPHs in mg/kg	2,000	2,000								
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Nickel in mg/kg	48	48								
Selenium in mg/kg	1	1								
Silver in mg/kg	0.02	0.02								
Zinc in mg/kg	85	85								
TCLP Metals										
Total Arsenic in mg/L	5	5								
Total Cadmium in mg/L	1	1								
Total Chromium (Total) in mg/L	5	5								
Total Lead in mg/L	5	5								
Total Selenium in mg/L	1	1								
Total Silver in mg/L	5	5								
Total Barium in mg/L	100	100								
Conventional Chemistry Parameters (including other metals)										
Barium in mg/kg	16,000	700,000								
Chloride in mg/kg										
pH in ph units	2.5 - 11	2.5 - 11	10.9	8.92	8.49	11.9	11.9	11.3	11.7	10.1
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-1B - Soil Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	CP-DS08 (8-12 ft) 6/2/11 RI	EMW-02S (6-7.5 ft) 6/3/93 Pre-RI	EMW-28D FD (18-19.5 ft) 6/10/93 Pre-RI	EMW-28D (18-19.5 ft) 6/10/93 Pre-RI	EMW-28D (28-29.5 ft) 6/10/93 Pre-RI	ESB-17S (11-12.5 ft) 6/1/93 Pre-RI	P10-SB01 (0-4 ft) 7/22/04 Pre-RI	P10-SB01 (4-8 ft) 7/22/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Diesel Range Hydrocarbons in mg/kg	2,000	2,000							13	6.3
Oil Range Hydrocarbons in mg/kg	2,000	2,000							79	24
Total TPHs in mg/kg	2,000	2,000							92	30.3
Heavy Metals										
Arsenic in mg/kg	7	7							5 U	6 U
Cadmium in mg/kg	1	1							0.2 U	0.3
Chromium (Total) in mg/kg	260	260							21.9 J	21.0 J
Copper in mg/kg	36	36							26.2 J	26.2 J
Lead in mg/kg	81	81							27 J	29 J
Nickel in mg/kg	48	48							18	18
Selenium in mg/kg	1	1								
Silver in mg/kg	0.02	0.02								
Zinc in mg/kg	85	85							62.2 J	55.0 J
TCLP Metals										
Total Arsenic in mg/L	5	5								
Total Cadmium in mg/L	1	1								
Total Chromium (Total) in mg/L	5	5								
Total Lead in mg/L	5	5								
Total Selenium in mg/L	1	1								
Total Silver in mg/L	5	5								
Total Barium in mg/L	100	100								
Conventional Chemistry Parameters (including other metals)										
Barium in mg/kg	16,000	700,000								
Chloride in mg/kg				1,010	215	371	140	6,940		
pH in ph units	2.5 - 11	2.5 - 11	9.39						11.96	10.09
Sulfide in mg/kg				10.9	0.20 U	2.8	0.20 U	0.20 U		
Total Organic Carbon in percent				0.70	0.98	1.3	0.80	0.66		

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AMW-02 10/02/09 RI	AMW-02 04/06/10 RI	AMW-03 10/02/09 RI	AMW-03 04/06/10 RI	ATW-A04 05/05/04 Pre-RI	ATW-AB03 05/05/04 Pre-RI	ATW-AB04 05/05/04 Pre-RI	ATW-B01 05/05/04 Pre-RI	ATW-B02 05/05/04 Pre-RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	41.7	28.1	14.1	11.1		0.2 U	0.8		
Total Mercury in ug/L	0.059	0.059									
Mercury Speciation											
Dimethylmercury in ug/L											
Mercury (acid-labile) in ug/L											
Mercury (elemental) in ug/L	0.89	1.9									
Methylmercury in ug/L	0.025	0.025									
Field Parameters											
Conductivity in us/cm			27,700	18,920	9,018	1,030	16,070	5,189	10,150	7,843	23,380
Dissolved Oxygen in mg/L			0.46	0.3	0.25	0.5	0.3	2.81	1.22		0.12
Eh (ORP) in mVolts			-725.1	-416.8	-429.2	-492.7	-290.9	-208.8	-346.2	-307.8	-311.2
pH in pH units	6.2 - 8.5	6.2 - 8.5	10	9.77	11.82	12.24	10.86	6.41	8.04	10.03	10.43
Practical Salinity (Calculated) in PSU			16.8	11.1	5.0	0.5	9.3	2.7	5.6	4.3	13.9
Salinity in g/L								2.81	5.75	4.36	14.19
Temperature in deg C			17.56	11.54	17.88	12.27	14.46	13.99	16.39	16.43	16.36
Turbidity in NTU			30		20	10					

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	ATW-B03 05/04/04 Pre-RI	ATW-B04 05/04/04 Pre-RI	ATW-B04 05/04/04 Field Dup Pre-RI	ATW-BC01 05/05/04 Pre-RI	ATW-BC02 05/05/04 Pre-RI	ATW-C01 05/04/04 Pre-RI	ATW-C02 05/04/04 Pre-RI	CP-DW01 06/30/11 RI	CP-DW01 07/20/11 RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	0.2 U	0.2 U	0.2 U	3.7	4.4	0.3	2.9		0.05 J
Total Mercury in ug/L	0.059	0.059								0.0415	
Mercury Speciation											
Dimethylmercury in ug/L											
Mercury (acid-labile) in ug/L											
Mercury (elemental) in ug/L	0.89	1.9									
Methylmercury in ug/L	0.025	0.025									
Field Parameters											
Conductivity in us/cm			4,422			16,900	67,570			>1900	
Dissolved Oxygen in mg/L			0.65			0.91	0.95				
Eh (ORP) in mVolts			-96.2			-320.2	-388.4				
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.56			9.08	8.23			7.54	7.44
Practical Salinity (Calculated) in PSU			2.3			9.8	45.3				
Salinity in g/L			2.37			9.86	45.85				
Temperature in deg C			14.15			14.24	14.17			17.1	
Turbidity in NTU											

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW01 10/02/09 RI	CP-MW01 04/06/10 RI	CP-MW02 10/01/09 RI	CP-MW02 04/05/10 RI	CP-MW04 09/29/09 RI	CP-MW04 04/05/10 RI	CP-MW06 10/02/09 RI	CP-MW06 04/05/10 RI	CP-MW07 04/06/10 RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	6.61	1.32	0.0812	0.0979	0.00467	0.0169	4.9	8.65	0.00072 U
Total Mercury in ug/L	0.059	0.059									
Mercury Speciation											
Dimethylmercury in ug/L											
Mercury (acid-labile) in ug/L											
Mercury (elemental) in ug/L	0.89	1.9									
Methylmercury in ug/L	0.025	0.025									
Field Parameters											
Conductivity in us/cm			7,469	6,405	104,300	9,026	72,340	70,130	12,870	10,500	21,720
Dissolved Oxygen in mg/L			0.39	0.33	0.3	0.41	0.51	0.16	0.4	0.22	0.66
Eh (ORP) in mVolts			-466.8	-267.8	-215.5	-171.2	-305.7	-334.6	-598.1	-272.7	-177.1
pH in pH units	6.2 - 8.5	6.2 - 8.5	9.95	9.79	7.1	7.17	7.05	6.83	9.33	8.9	6.59
Practical Salinity (Calculated) in PSU			4.1	3.4	75.2	5.0	49.0	47.3	7.3	5.8	12.8
Salinity in g/L											
Temperature in deg C			16.58	11.83	18.34	12.52	16.2	15.04	18.78	14.23	11.39
Turbidity in NTU			20		20	20	10	50	10	50	10

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW08 04/01/10 RI	CP-MW09 04/01/10 RI	CP-MW11 04/05/10 RI	CP-MW12 04/13/10 RI	CP-MW13 12/17/10 RI	CP-MW13 12/17/10 Field Dup RI	CP-MW14 12/23/10 RI	CP-MW15 12/21/10 RI	CP-MW15 02/01/11 RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	0.00165	0.164	0.00414	0.00034 U	0.406	0.399	1.26	619	232
Total Mercury in ug/L	0.059	0.059									248
Mercury Speciation											
Dimethylmercury in ug/L											
Mercury (acid-labile) in ug/L											
Mercury (elemental) in ug/L	0.89	1.9									
Methylmercury in ug/L	0.025	0.025									
Field Parameters											
Conductivity in us/cm			976	1,354	5,183		2,551		49,760	17,250	
Dissolved Oxygen in mg/L			0.49	0.44	1.28		0.5		0.28	0.2	
Eh (ORP) in mVolts			-162.3	-343	-91.2		-40.7		-339.4	-375.7	
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.06	9.05	6.72	7.3	7.86		9.06	11.17	
Practical Salinity (Calculated) in PSU			0.5	0.7	2.7						
Salinity in g/L											
Temperature in deg C			12.44	12.63	11.93	10.4	14.97		15.97	15.5	
Turbidity in NTU			20	100	30	20	10			50	

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MWA1 10/02/09 RI	CP-MWA1 10/02/09 Field Dup RI	CP-MWA1 04/06/10 RI	CP-MWA1 04/06/10 Field Dup RI	CP-MWA2 10/02/09 RI	CP-MWA2 03/29/10 RI	CP-MWA3 09/28/09 RI	CP-MWA3 03/29/10 RI
Mercury										
Dissolved Mercury in ug/L	0.059	0.059	10.8	11.3	14.3 J	9.61 J	0.00301	0.0001 J	0.00103 U	0.00058 J
Total Mercury in ug/L	0.059	0.059								
Mercury Speciation										
Dimethylmercury in ug/L										
Mercury (acid-labile) in ug/L										
Mercury (elemental) in ug/L	0.89	1.9								
Methylmercury in ug/L	0.025	0.025								
Field Parameters										
Conductivity in us/cm			22,830		18,000		2,878	2,932	2,880	2,033
Dissolved Oxygen in mg/L					0.4		0.63	0.58	0.54	1.07
Eh (ORP) in mVolts			-744.5		-432.3		-319.3	-74.4	-285.9	-28.1
pH in pH units	6.2 - 8.5	6.2 - 8.5	11.04		11.06		6.72	6.54	6.7	6.6
Practical Salinity (Calculated) in PSU			13.6		10.5		1.5	1.5	1.5	1.0
Salinity in g/L										
Temperature in deg C			17.1		12.62		15.9	11.68	16	10.49
Turbidity in NTU			30		30		10	10	10	10

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MWB1 10/01/09 RI	CP-MWB1 04/06/10 RI	CP-MWB2 10/02/09 RI	CP-MWB2 04/06/10 RI	CP-MWB3 09/28/09 RI	CP-MWB3 03/29/10 RI	CP-MWC1 10/01/09 RI	CP-MWC1 04/06/10 RI
Mercury										
Dissolved Mercury in ug/L	0.059	0.059	1.24	1.71	1.11	1.18	0.306	0.0479	1.84	2.75
Total Mercury in ug/L	0.059	0.059								
Mercury Speciation										
Dimethylmercury in ug/L										
Mercury (acid-labile) in ug/L										
Mercury (elemental) in ug/L	0.89	1.9								
Methylmercury in ug/L	0.025	0.025								
Field Parameters										
Conductivity in us/cm			15,880	9,042	22,320	17,860	31,080	2,494	3,956	3,910
Dissolved Oxygen in mg/L			0.55	0.4	0.53	0.48	0.92	0.45	0.4	0.47
Eh (ORP) in mVolts			-371.5	-309	-384.1	-284.3	-343.3	-241.7	-350.3	-321
pH in pH units	6.2 - 8.5	6.2 - 8.5	9.49	9.74	7.25	7.11	6.85	6.62	9.62	9.77
Practical Salinity (Calculated) in PSU			9.1	5.0	13.2	10.4	19.0	1.3	2.1	2.0
Salinity in g/L										
Temperature in deg C			17.76	11.9	16.97	11.51	15.37	10.55	18.97	11.56
Turbidity in NTU			20	20	20		15	20	20	20

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MWC2 10/01/09 RI	CP-MWC2 03/29/10 RI	CP-MWC3 09/28/09 RI	CP-MWC3 03/29/10 RI	EMW-01S 07/08/93 Pre-RI	EMW-01S 12/09/93 Pre-RI	EMW-01S 10/02/09 RI	EMW-01S 03/31/10 RI
Mercury										
Dissolved Mercury in ug/L	0.059	0.059	0.129	0.00406	0.00171 U	0.00092 J	0.2 U	0.2 U	0.0167	0.0079
Total Mercury in ug/L	0.059	0.059								
Mercury Speciation										
Dimethylmercury in ug/L										
Mercury (acid-labile) in ug/L										
Mercury (elemental) in ug/L	0.89	1.9								
Methylmercury in ug/L	0.025	0.025								
Field Parameters										
Conductivity in us/cm			7,813	6,912	21,900	26,810	2,280	1,410	1,347	1,175
Dissolved Oxygen in mg/L			0.69	0.54	0.45	1.01	1.48	1.93	0.74	0.39
Eh (ORP) in mVolts			-185.3	-90.7	-290.2	-2.6	-99	-107	-294	-129.3
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.04	7.01	6.99	7.24	7.31	7.31	6.97	6.95
Practical Salinity (Calculated) in PSU			4.3	3.7	13.0	16.2	1.2	0.7	0.7	0.6
Salinity in g/L							0.7	0.2		
Temperature in deg C			17.33	11.86	17.65	10.69	19.3	12.7	19.79	11.7
Turbidity in NTU			10	10	5	20			20	20

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-02S 07/08/93 Pre-RI	EMW-02S 12/09/93 Pre-RI	EMW-02S 10/01/09 RI	EMW-02S 04/05/10 RI	EMW-04S 07/08/93 Pre-RI	EMW-04S 12/09/93 Pre-RI	EMW-04S 12/09/93 Field Dup Pre-RI	EMW-04S 10/02/09 RI	EMW-04S 03/31/10 RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	0.22	0.53	2.39	1.63	0.2 U	0.2 U	0.2 U	0.00323	0.00094 U
Total Mercury in ug/L	0.059	0.059	7.744								
Mercury Speciation											
Dimethylmercury in ug/L			5.00E-06								
Mercury (acid-labile) in ug/L			0.601								
Mercury (elemental) in ug/L	0.89	1.9	0.000176								
Methylmercury in ug/L	0.025	0.025	0.06125								
Field Parameters											
Conductivity in us/cm			49,400	42,600	3,354	2,643	4,330	3,700		2,365	2,161
Dissolved Oxygen in mg/L			3.3	1.78	0.73	0.38	2.4	1.59		0.53	0.37
Eh (ORP) in mVolts			-113	-78	-356.9	-254.6	-66	-51		-302.6	-128.4
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.04	6.47	7.66	8.88	6.6	6.77		6.45	6.47
Practical Salinity (Calculated) in PSU			31.8	27.0	1.7	1.3	2.3	1.9		1.2	1.1
Salinity in g/L			32.4	27.4			1.9	1.5			
Temperature in deg C			17.6	15.2	19.63	12.49	16.2	12.6		20.79	11.82
Turbidity in NTU					10	30				10	20

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-05S 07/07/93 Pre-RI	EMW-05S 07/08/93 Pre-RI	EMW-05S 07/20/93 Pre-RI	EMW-05S 12/09/93 Pre-RI	EMW-14S 12/09/93 Pre-RI	EMW-14S 10/01/09 RI	EMW-14S 04/05/10 RI	EMW-15S 12/16/93 Pre-RI
Mercury										
Dissolved Mercury in ug/L	0.059	0.059			0.2 U	0.2 U	0.96	2.53	5.03	1.3
Total Mercury in ug/L	0.059	0.059	4.46							
Mercury Speciation										
Dimethylmercury in ug/L			1.30E-05							
Mercury (acid-labile) in ug/L			0.028							
Mercury (elemental) in ug/L	0.89	1.9	3.00E-06 U							
Methylmercury in ug/L	0.025	0.025	0.013616							
Field Parameters										
Conductivity in us/cm				2,730		2,900	19,630	2,601	2,926	5,980
Dissolved Oxygen in mg/L				1.23		1.52	1.2	0.36	0.28	2.8
Eh (ORP) in mVolts				-92		-43	-115	-332.1	-224	
pH in pH units	6.2 - 8.5	6.2 - 8.5		6.36		6.82	7.9	8.47	9.19	
Practical Salinity (Calculated) in PSU				1.4		1.5	11.5	1.3	1.5	3.2
Salinity in g/L				1		1	11.5			
Temperature in deg C				18.8		11.1	13.4	18.8	11.94	10.4
Turbidity in NTU								20	20	

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-19S 12/10/93 Pre-RI	EMW-19S 02/18/94 Pre-RI	EMW-19S 10/02/09 RI	EMW-19S 04/05/10 RI	EMW-28D 07/08/93 Pre-RI	EMW-28D 12/16/93 Pre-RI	EMW-28D 09/29/09 RI	EMW-28D 03/31/10 RI	EMW-28D 03/31/10 Field Dup RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	460	460	18.5	28.5	0.2 U	0.2 U	0.00399	0.00199	0.00374
Total Mercury in ug/L	0.059	0.059									
Mercury Speciation											
Dimethylmercury in ug/L											
Mercury (acid-labile) in ug/L											
Mercury (elemental) in ug/L	0.89	1.9									
Methylmercury in ug/L	0.025	0.025									
Field Parameters											
Conductivity in us/cm			15,000		6,342	1,779	12,220	12,240	6,410	7,286	
Dissolved Oxygen in mg/L			0.64	3	0.39	0.36	2.28	1.4	0.87	0.52	
Eh (ORP) in mVolts			-312	-317	-640.8	-477.7	-0140	-030	-258.6	-217.1	
pH in pH units	6.2 - 8.5	6.2 - 8.5	11.93	13.19	10.92	11.14	7.36	7.51	7.24	7.26	
Practical Salinity (Calculated) in PSU			8.6		3.4	0.9	6.9	6.9	3.4	3.9	
Salinity in g/L			8.5				6.7				
Temperature in deg C			10.5	11.4	19.21	12.39	14.2	11.3	14.23	13.02	
Turbidity in NTU					10	30			20	20	

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LAW-03 05/20/92 Pre-RI	LAW-03 07/07/92 Pre-RI	LAW-04 05/20/92 Pre-RI	LAW-04 07/07/92 Pre-RI	LAW-04 07/20/93 Pre-RI	LAW-04 12/10/93 Pre-RI	LAW-05 05/20/92 Pre-RI	LAW-05 07/07/92 Pre-RI
Mercury										
Dissolved Mercury in ug/L	0.059	0.059	0.3	2	0.2 U	1 U	0.2 U	0.2 U	0.2 U	1 U
Total Mercury in ug/L	0.059	0.059	79	22	25	8			58	46
Mercury Speciation										
Dimethylmercury in ug/L										
Mercury (acid-labile) in ug/L										
Mercury (elemental) in ug/L	0.89	1.9								
Methylmercury in ug/L	0.025	0.025								
Field Parameters										
Conductivity in us/cm								26,300		
Dissolved Oxygen in mg/L								2.9		
Eh (ORP) in mVolts								-125		
pH in pH units	6.2 - 8.5	6.2 - 8.5						6.8		
Practical Salinity (Calculated) in PSU								15.8		
Salinity in g/L								15.8		
Temperature in deg C								12		
Turbidity in NTU										

Table 7-1C - Groundwater Mercury Data for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LAW-05 07/09/93 Pre-RI	LAW-05 12/16/93 Pre-RI	LAW-06 05/20/92 Pre-RI	LAW-06 07/07/92 Pre-RI	LAW-06 07/08/93 Pre-RI	LAW-06 12/09/93 Pre-RI	LAW-07 05/20/92 Pre-RI	LAW-07 07/07/92 Pre-RI
Mercury										
Dissolved Mercury in ug/L	0.059	0.059	9.4	2.7	0.2 U	1 U	0.2 U	0.3	0.2 U	1 U
Total Mercury in ug/L	0.059	0.059			2	1			0.2 U	1 U
Mercury Speciation										
Dimethylmercury in ug/L										
Mercury (acid-labile) in ug/L										
Mercury (elemental) in ug/L	0.89	1.9								
Methylmercury in ug/L	0.025	0.025								
Field Parameters										
Conductivity in us/cm			6,870				1,120	1,250		
Dissolved Oxygen in mg/L			1.17				1.54	2.66		
Eh (ORP) in mVolts			52				-114	-72		
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.97				7.06	6.91		
Practical Salinity (Calculated) in PSU			3.7				0.5	0.6		
Salinity in g/L			2.2				0	0.1		
Temperature in deg C			19.5				18.5	10.6		
Turbidity in NTU										

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AMW-02 10/02/09 RI	AMW-02 04/06/10 RI	AMW-03 10/02/09 RI	AMW-03 04/06/10 RI	CP-DW01 07/20/11 RI	CP-MW06 10/02/09 RI	CP-MW06 04/05/10 RI	CP-MW13 12/17/10 RI	CP-MW14 12/23/10 RI
Dissolved Metals											
Dissolved Arsenic in ug/L	5	5					10.0 U				
Dissolved Cadmium in ug/L	8.8	8.8					0.5 U				
Dissolved Chromium (Total) in ug/L	260	260					2.3				
Dissolved Chromium (VI) in ug/l	50	50					50 U				
Dissolved Copper in ug/L	3.1	3.1					2.0 J				
Dissolved Lead in ug/L	8.1	8.1					10.0 U				
Dissolved Nickel in ug/L	8.2	8.2					0.8 J				
Dissolved Selenium in ug/l	71	71					8.3 J				
Dissolved Silver in ug/L	1.9	1.9					2 U				
Dissolved Zinc in ug/L	81	81					67.8 J				
Total Metals											
Total Arsenic in ug/l	5	5									
Total Cadmium in ug/l	8.8	8.8									
Total Chromium (Total) in ug/l	260	260									
Total Chromium (VI) in ug/l	50	50									
Total Copper in ug/l	3.1	3.1									
Total Lead in ug/l	8.1	8.1									
Total Nickel in ug/l	8.2	8.2									
Total Selenium in ug/l	71	71									
Total Silver in ug/L	1.9	1.9									
Total Zinc in ug/l	81	81									

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AMW-02 10/02/09 RI	AMW-02 04/06/10 RI	AMW-03 10/02/09 RI	AMW-03 04/06/10 RI	CP-DW01 07/20/11 RI	CP-MW06 10/02/09 RI	CP-MW06 04/05/10 RI	CP-MW13 12/17/10 RI	CP-MW14 12/23/10 RI
Conventional Chemistry Parameters (including other metals)											
Alkalinity (Total) in mg/L as CaCO3			8,450	5,350	5,240	6,070		1,550	1,470	241 J	12,000
Bicarbonate in mg/L											7,750
Bromide in mg/L			1.1 J		0.3 J			0.4 J			
Carbon, Dissolved Organic (DOC) in mg/L						644				11.6	786
Carbonate in mg/L											4,240
Chloride in mg/L			5,490	3,800	261	318		3,270	2,690		
Conductivity in umhos/cm										2,470	47,800
Dissolved Calcium in mg/L			14.3	12	6.69	4.33		6.92	12		
Dissolved Iron in mg/L			7.27		4.94			2.3		0.102	5.1
Dissolved Magnesium in mg/L			0.692	1.04	0.163	0.0481 J		0.681	1.48		
Dissolved Manganese in mg/L	0.1	0.1	0.0873		0.096			0.028		0.014	0.0373
Dissolved Potassium in mg/L			26.4	20.7	14.9	20.2		5.65	4.96		
Dissolved Sodium in mg/L			7,550	5,080	2,660	3,160		2,820	2,490		
Fluoride in mg/L			2.1 J		5.7			2.3 J			
Nitrate as Nitrogen in mg/L			5 UJ		2 U			5 UJ			
Nitrite as Nitrogen in mg/L			20 U		2 U			10 U			
Practical Salinity (Calculated) in PSU											
Sulfate in mg/L			52	10 J	25	23		30	23	0.64	20 U
Sulfide in mg/L			7.55	199	3.57	46.3		13.4	0.92	0.4	16.1
Total Calcium in mg/l											
Total Dissolved Solids in mg/L			21,800	14,900	9,770	11,000		8,240	6,640	1,590	38,100
Total Magnesium in mg/l											
Total Organic Carbon in ug/L											
Total Suspended Solids in mg/L											
Field Parameters											
Conductivity in us/cm			27,700	18,920	9,018	1,030		12,870	10,500	2,551	49,760
Dissolved Oxygen in mg/L			0.46	0.3	0.25	0.5		0.4	0.22	0.5	0.28
Eh (ORP) in mVolts			-725.1	-416.8	-429.2	-492.7		-598.1	-272.7	-40.7	-339.4
pH in pH units	6.2 - 8.5	6.2 - 8.5	10	9.77	11.82	12.24	7.44	9.33	8.9	7.86	9.06
Salinity in g/L											
Temperature in deg C			17.56	11.54	17.88	12.27		18.78	14.23	14.97	15.97
Turbidity in NTU			30		20	10		10	50	10	

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW15 12/21/10 RI	CP-MW15 02/01/11 RI	CP-MWA1 10/02/09 RI	CP-MWA1 10/02/09 Field Dup RI	CP-MWA1 04/06/10 RI	CP-MWA1 04/06/10 Field Dup RI	CP-MWA2 10/02/09 RI	CP-MWA2 03/29/10 RI	CP-MWA3 09/28/09 RI
Dissolved Metals											
Dissolved Arsenic in ug/L	5	5		97.2							
Dissolved Cadmium in ug/L	8.8	8.8		1.440							
Dissolved Chromium (Total) in ug/L	260	260		999							
Dissolved Chromium (VI) in ug/l	50	50									
Dissolved Copper in ug/L	3.1	3.1		56.9							
Dissolved Lead in ug/L	8.1	8.1		20.2							
Dissolved Nickel in ug/L	8.2	8.2		587							
Dissolved Selenium in ug/l	71	71									
Dissolved Silver in ug/L	1.9	1.9									
Dissolved Zinc in ug/L	81	81		155							
Total Metals											
Total Arsenic in ug/l	5	5									
Total Cadmium in ug/l	8.8	8.8									
Total Chromium (Total) in ug/l	260	260									
Total Chromium (VI) in ug/l	50	50									
Total Copper in ug/l	3.1	3.1									
Total Lead in ug/l	8.1	8.1									
Total Nickel in ug/l	8.2	8.2									
Total Selenium in ug/l	71	71									
Total Silver in ug/L	1.9	1.9									
Total Zinc in ug/l	81	81									

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW15 12/21/10 RI	CP-MW15 02/01/11 RI	CP-MWA1 10/02/09 RI	CP-MWA1 10/02/09 Field Dup RI	CP-MWA1 04/06/10 RI	CP-MWA1 04/06/10 Field Dup RI	CP-MWA2 10/02/09 RI	CP-MWA2 03/29/10 RI	CP-MWA3 09/28/09 RI
Conventional Chemistry Parameters (including other metals)											
Alkalinity (Total) in mg/L as CaCO3			10,200	9,510	11,800	11,300	13,400	11,800	1,230	1,330	1,210
Bicarbonate in mg/L			9.0 U								
Bromide in mg/L					0.1 U	5 U			0.68		0.76
Carbon, Dissolved Organic (DOC) in mg/L			2,580	2,600			2,270	2,320			
Carbonate in mg/L			9,500								
Chloride in mg/L				1,320	1,980	1,920	2,160	1,780	250	280	307
Conductivity in umhos/cm			15,800								
Dissolved Calcium in mg/L				15.4	19.1	18.3	6.11	6.52	132	145	166
Dissolved Iron in mg/L			32.7	24.5	9.84	9.74	10.1		27		19.7
Dissolved Magnesium in mg/L				0.071 J	2.61	2.44	0.135	0.132	110	121	69.6
Dissolved Manganese in mg/L	0.1	0.1	0.0201 UJ	0.014	0.207	0.192	0.0199 J		2.78		2.9
Dissolved Potassium in mg/L				23	52.3	52.3	61	64.6	51.1	49.4	40.9
Dissolved Sodium in mg/L				4,730	7,730	7,570	7,740	8,070	355	369	330
Fluoride in mg/L					4.34 J	3.95 J			0.2 U		0.359 J
Nitrate as Nitrogen in mg/L				2.5 U	5 U	5 UJ			0.1 UJ		0.5 U
Nitrite as Nitrogen in mg/L					5 U	5 U			5 U		0.5 U
Practical Salinity (Calculated) in PSU											
Sulfate in mg/L			32	18	65	56	62	51	0.2 U	0.1 J	1 U
Sulfide in mg/L			98.9	75.4	13.5	14.3	296	269	0.245	0.034	0.33
Total Calcium in mg/l											
Total Dissolved Solids in mg/L			10,900	19,000	23,600	23,400	27,700	24,100	1,670	1,760	1,740
Total Magnesium in mg/l											
Total Organic Carbon in ug/L											
Total Suspended Solids in mg/L											
Field Parameters											
Conductivity in us/cm			17,250		22,830		18,000		2,878	2,932	2,880
Dissolved Oxygen in mg/L			0.2				0.4		0.63	0.58	0.54
Eh (ORP) in mVolts			-375.7		-744.5		-432.3		-319.3	-74.4	-285.9
pH in pH units	6.2 - 8.5	6.2 - 8.5	11.17		11.04		11.06		6.72	6.54	6.7
Salinity in g/L											
Temperature in deg C			15.5		17.1		12.62		15.9	11.68	16
Turbidity in NTU			50		30		30		10	10	10

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MWA3 03/29/10 RI	CP-MWB1 10/01/09 RI	CP-MWB1 04/06/10 RI	CP-MWB2 10/02/09 RI	CP-MWB2 04/06/10 RI	CP-MWB3 09/28/09 RI	CP-MWB3 03/29/10 RI	CP-MWC1 10/01/09 RI	CP-MWC1 04/06/10 RI
Dissolved Metals											
Dissolved Arsenic in ug/L	5	5									
Dissolved Cadmium in ug/L	8.8	8.8									
Dissolved Chromium (Total) in ug/L	260	260									
Dissolved Chromium (VI) in ug/l	50	50									
Dissolved Copper in ug/L	3.1	3.1									
Dissolved Lead in ug/L	8.1	8.1									
Dissolved Nickel in ug/L	8.2	8.2									
Dissolved Selenium in ug/l	71	71									
Dissolved Silver in ug/L	1.9	1.9									
Dissolved Zinc in ug/L	81	81									
Total Metals											
Total Arsenic in ug/l	5	5									
Total Cadmium in ug/l	8.8	8.8									
Total Chromium (Total) in ug/l	260	260									
Total Chromium (VI) in ug/l	50	50									
Total Copper in ug/l	3.1	3.1									
Total Lead in ug/l	8.1	8.1									
Total Nickel in ug/l	8.2	8.2									
Total Selenium in ug/l	71	71									
Total Silver in ug/L	1.9	1.9									
Total Zinc in ug/l	81	81									

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MWA3 03/29/10 RI	CP-MWB1 10/01/09 RI	CP-MWB1 04/06/10 RI	CP-MWB2 10/02/09 RI	CP-MWB2 04/06/10 RI	CP-MWB3 09/28/09 RI	CP-MWB3 03/29/10 RI	CP-MWC1 10/01/09 RI	CP-MWC1 04/06/10 RI
Conventional Chemistry Parameters (including other metals)											
Alkalinity (Total) in mg/L as CaCO3			1,040	2,270	2,080	1,870	1,730	2,380	1,770	1,160	1,080
Bicarbonate in mg/L											
Bromide in mg/L				0.9 J		2.3 J		5.5		0.2 J	
Carbon, Dissolved Organic (DOC) in mg/L					114		121				
Carbonate in mg/L											
Chloride in mg/L			161	5,110	2,460	6,560	5,580	9,350	6,810	598	658
Conductivity in umhos/cm											
Dissolved Calcium in mg/L			163	4.59	3.29	49.6	54.7	206	238	4.57	3.8
Dissolved Iron in mg/L				0.748	0.806	0.137	0.0877	2.98	1.88	0.455	
Dissolved Magnesium in mg/L			51.6	3.91	4.61	38.5	48.3	222	167	0.414	0.381
Dissolved Manganese in mg/L	0.1	0.1		0.0217	0.032	0.0315	0.0211	0.377	0.348	0.0427	
Dissolved Potassium in mg/L			30.6	27.4	14.4	65.7	63.2	170	120	3.61	3.1
Dissolved Sodium in mg/L			280	4,000	2,450	5,020	4,640	6,500	4,810	983	978
Fluoride in mg/L				0.89 J		2.47 J		4 U		0.52 J	
Nitrate as Nitrogen in mg/L				5 U		5 UJ		2 U		5 U	
Nitrite as Nitrogen in mg/L				10 U		20 U		20 U		5 U	
Practical Salinity (Calculated) in PSU											
Sulfate in mg/L			0.69	2 J	1 J	10 U	5 J	0.4 J	42.6	2 J	15
Sulfide in mg/L			0.012	22.3	23.3	15.3	23	0.357	0.401	6.2	6.76
Total Calcium in mg/l											
Total Dissolved Solids in mg/L			1,340	11,700	6,820	14,800	11,800	19,500	14,100	2,610	2,580
Total Magnesium in mg/l											
Total Organic Carbon in ug/L											
Total Suspended Solids in mg/L											
Field Parameters											
Conductivity in us/cm			2,033	15,880	9,042	22,320	17,860	31,080	2,494	3,956	3,910
Dissolved Oxygen in mg/L			1.07	0.55	0.4	0.53	0.48	0.92	0.45	0.4	0.47
Eh (ORP) in mVolts			-28.1	-371.5	-309	-384.1	-284.3	-343.3	-241.7	-350.3	-321
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.6	9.49	9.74	7.25	7.11	6.85	6.62	9.62	9.77
Salinity in g/L											
Temperature in deg C			10.49	17.76	11.9	16.97	11.51	15.37	10.55	18.97	11.56
Turbidity in NTU			10	20	20	20		15	20	20	20

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MWC2 10/01/09 RI	CP-MWC2 03/29/10 RI	CP-MWC3 09/28/09 RI	CP-MWC3 03/29/10 RI	EMW-01S 12/09/93 Pre-RI	EMW-02S 07/08/93 Pre-RI	EMW-02S 12/09/93 Pre-RI	EMW-02S 10/01/09 RI	EMW-02S 04/05/10 RI
Dissolved Metals											
Dissolved Arsenic in ug/L	5	5									
Dissolved Cadmium in ug/L	8.8	8.8									
Dissolved Chromium (Total) in ug/L	260	260									
Dissolved Chromium (VI) in ug/l	50	50									
Dissolved Copper in ug/L	3.1	3.1									
Dissolved Lead in ug/L	8.1	8.1									
Dissolved Nickel in ug/L	8.2	8.2									
Dissolved Selenium in ug/l	71	71									
Dissolved Silver in ug/L	1.9	1.9									
Dissolved Zinc in ug/L	81	81									
Total Metals											
Total Arsenic in ug/l	5	5									
Total Cadmium in ug/l	8.8	8.8									
Total Chromium (Total) in ug/l	260	260									
Total Chromium (VI) in ug/l	50	50									
Total Copper in ug/l	3.1	3.1									
Total Lead in ug/l	8.1	8.1									
Total Nickel in ug/l	8.2	8.2									
Total Selenium in ug/l	71	71									
Total Silver in ug/L	1.9	1.9									
Total Zinc in ug/l	81	81									

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MWC2 10/01/09 RI	CP-MWC2 03/29/10 RI	CP-MWC3 09/28/09 RI	CP-MWC3 03/29/10 RI	EMW-01S 12/09/93 Pre-RI	EMW-02S 07/08/93 Pre-RI	EMW-02S 12/09/93 Pre-RI	EMW-02S 10/01/09 RI	EMW-02S 04/05/10 RI
Conventional Chemistry Parameters (including other metals)											
Alkalinity (Total) in mg/L as CaCO3			1,800	1,840	393	256	334	1,270	1,230	862	768
Bicarbonate in mg/L											
Bromide in mg/L			1.1 J		22.4					0.3 J	
Carbon, Dissolved Organic (DOC) in mg/L											
Carbonate in mg/L											
Chloride in mg/L			1,560	1,300	6,650	9,560	180	20,200	16,800	700	391
Conductivity in umhos/cm											
Dissolved Calcium in mg/L			42	70.2	277	307	51	170	77	10.2	3.8
Dissolved Iron in mg/L			0.491		1					1.68	
Dissolved Magnesium in mg/L			44.4	49.8	481	612	8.1	85	33	1.9	0.56
Dissolved Manganese in mg/L	0.1	0.1	0.0575		0.0588		1.4	2.8	0.79	0.125	
Dissolved Potassium in mg/L			38.6	36.1	154	178	3.4	58	34	3.81	2.22
Dissolved Sodium in mg/L			1,800	1,570	3,840	5,460	210	13,000	9,600	880	663
Fluoride in mg/L			1.07 J		4 U					0.39 J	
Nitrate as Nitrogen in mg/L			5 U		2 U					5 U	
Nitrite as Nitrogen in mg/L			5 U		20 U					5 U	
Practical Salinity (Calculated) in PSU											
Sulfate in mg/L			10 U	0.3 J	872	1,300	10 U	193	160	43	55.6
Sulfide in mg/L			0.589	0.185	0.82	0.015	0.05 U	0.45	0.05 U	0.643	2.06
Total Calcium in mg/l											
Total Dissolved Solids in mg/L			4,880	4,630	13,100	17,700		27,000		2,380	1,640
Total Magnesium in mg/l											
Total Organic Carbon in ug/L							600	13,100	2,200		
Total Suspended Solids in mg/L											
Field Parameters											
Conductivity in us/cm			7,813	6,912	21,900	26,810	1,410	49,400	42,600	3,354	2,643
Dissolved Oxygen in mg/L			0.69	0.54	0.45	1.01	1.93	3.3	1.78	0.73	0.38
Eh (ORP) in mVolts			-185.3	-90.7	-290.2	-2.6	-107	-113	-78	-356.9	-254.6
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.04	7.01	6.99	7.24	7.31	7.04	6.47	7.66	8.88
Salinity in g/L							0.2	32.4	27.4		
Temperature in deg C			17.33	11.86	17.65	10.69	12.7	17.6	15.2	19.63	12.49
Turbidity in NTU			10	10	5	20				10	30

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-04S 12/09/93 Pre-RI	EMW-04S 12/09/93 Field Dup Pre-RI	EMW-05S 07/08/93 Pre-RI	EMW-05S 12/09/93 Pre-RI	EMW-14S 12/09/93 Pre-RI	EMW-14S 10/01/09 RI	EMW-14S 04/05/10 RI	EMW-15S 12/16/93 Pre-RI	EMW-19S 12/10/93 Pre-RI
Dissolved Metals											
Dissolved Arsenic in ug/L	5	5									
Dissolved Cadmium in ug/L	8.8	8.8									
Dissolved Chromium (Total) in ug/L	260	260									
Dissolved Chromium (VI) in ug/l	50	50									
Dissolved Copper in ug/L	3.1	3.1									
Dissolved Lead in ug/L	8.1	8.1									
Dissolved Nickel in ug/L	8.2	8.2									
Dissolved Selenium in ug/l	71	71									
Dissolved Silver in ug/L	1.9	1.9									
Dissolved Zinc in ug/L	81	81									
Total Metals											
Total Arsenic in ug/l	5	5									
Total Cadmium in ug/l	8.8	8.8									
Total Chromium (Total) in ug/l	260	260									
Total Chromium (VI) in ug/l	50	50									
Total Copper in ug/l	3.1	3.1									
Total Lead in ug/l	8.1	8.1									
Total Nickel in ug/l	8.2	8.2									
Total Selenium in ug/l	71	71									
Total Silver in ug/L	1.9	1.9									
Total Zinc in ug/l	81	81									

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-04S 12/09/93 Pre-RI	EMW-04S 12/09/93 Field Dup Pre-RI	EMW-05S 07/08/93 Pre-RI	EMW-05S 12/09/93 Pre-RI	EMW-14S 12/09/93 Pre-RI	EMW-14S 10/01/09 RI	EMW-14S 04/05/10 RI	EMW-15S 12/16/93 Pre-RI	EMW-19S 12/10/93 Pre-RI
Conventional Chemistry Parameters (including other metals)											
Alkalinity (Total) in mg/L as CaCO3			1,020	1,010	492	321	1,030	512	549	1,080	9,380
Bicarbonate in mg/L											
Bromide in mg/L								5 U			
Carbon, Dissolved Organic (DOC) in mg/L											
Carbonate in mg/L											
Chloride in mg/L			650	625	560	600	26,000	514	628	1,090	1,370
Conductivity in umhos/cm											
Dissolved Calcium in mg/L			160	160		170	46	5.78	6.96	89	4.6
Dissolved Iron in mg/L								0.924			
Dissolved Magnesium in mg/L			77	73		32	13	0.638	0.609	38	0.05 U
Dissolved Manganese in mg/L	0.1	0.1	0.51	0.53		3.4	1.3	0.158		0.81	0.01 U
Dissolved Potassium in mg/L			43	43		24	12	1.79	2.06	27	25
Dissolved Sodium in mg/L			530	520		380	4,300	531	712	1,000	4,700
Fluoride in mg/L								0.44 J			
Nitrate as Nitrogen in mg/L								5 U			
Nitrite as Nitrogen in mg/L								5 U			
Practical Salinity (Calculated) in PSU											
Sulfate in mg/L			10 U	10 U	100 U	51.7	245	23	21.7	10 U	1,220
Sulfide in mg/L			0.05 U	0.05 U	0.06	0.05 U	1.9	1.19	0.769	0.5 U	0.5 U
Total Calcium in mg/l											
Total Dissolved Solids in mg/L								1,600	1,870		
Total Magnesium in mg/l											
Total Organic Carbon in ug/L			1,600	3,800	34,900	16,500	5,100			48,800	55,100
Total Suspended Solids in mg/L											
Field Parameters											
Conductivity in us/cm			3,700		2,730	2,900	19,630	2,601	2,926	5,980	15,000
Dissolved Oxygen in mg/L			1.59		1.23	1.52	1.2	0.36	0.28	2.8	0.64
Eh (ORP) in mVolts			-51		-92	-43	-115	-332.1	-224		-312
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.77		6.36	6.82	7.9	8.47	9.19		11.93
Salinity in g/L			1.5		1	1	11.5				8.5
Temperature in deg C			12.6		18.8	11.1	13.4	18.8	11.94	10.4	10.5
Turbidity in NTU								20	20		

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-19S 10/02/09 RI	EMW-19S 04/05/10 RI	EMW-28D 12/16/93 Pre-RI	LAW-04 12/10/93 Pre-RI	LAW-05 12/16/93 Pre-RI	LAW-06 12/09/93 Pre-RI
Dissolved Metals								
Dissolved Arsenic in ug/L	5	5						
Dissolved Cadmium in ug/L	8.8	8.8						
Dissolved Chromium (Total) in ug/L	260	260						
Dissolved Chromium (VI) in ug/l	50	50						
Dissolved Copper in ug/L	3.1	3.1						
Dissolved Lead in ug/L	8.1	8.1						
Dissolved Nickel in ug/L	8.2	8.2						
Dissolved Selenium in ug/l	71	71						
Dissolved Silver in ug/L	1.9	1.9						
Dissolved Zinc in ug/L	81	81						
Total Metals								
Total Arsenic in ug/l	5	5						
Total Cadmium in ug/l	8.8	8.8						
Total Chromium (Total) in ug/l	260	260						
Total Chromium (VI) in ug/l	50	50						
Total Copper in ug/l	3.1	3.1						
Total Lead in ug/l	8.1	8.1						
Total Nickel in ug/l	8.2	8.2						
Total Selenium in ug/l	71	71						
Total Silver in ug/L	1.9	1.9						
Total Zinc in ug/l	81	81						

Table 7-1D - Groundwater Chemistry Data (non-Mercury) for Caustic Plume Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-19S 10/02/09 RI	EMW-19S 04/05/10 RI	EMW-28D 12/16/93 Pre-RI	LAW-04 12/10/93 Pre-RI	LAW-05 12/16/93 Pre-RI	LAW-06 12/09/93 Pre-RI
Conventional Chemistry Parameters (including other metals)								
Alkalinity (Total) in mg/L as CaCO3			1,710	4,900	2,020	856	1,200	414
Bicarbonate in mg/L								
Bromide in mg/L			5 U					
Carbon, Dissolved Organic (DOC) in mg/L								
Carbonate in mg/L								
Chloride in mg/L			557	3,310	85	31,100	865	131
Conductivity in umhos/cm								
Dissolved Calcium in mg/L			5.96	9.9	53	280	80	110
Dissolved Iron in mg/L			6.6					
Dissolved Magnesium in mg/L			0.0411	0.0215 J	180	97	22	11
Dissolved Manganese in mg/L	0.1	0.1	0.0451		0.036	4.3	0.28	1.7
Dissolved Potassium in mg/L			8.87	25.2	96	60	25	4.3
Dissolved Sodium in mg/L			1,480	4,310	2,400	32,000	970	140
Fluoride in mg/L			10 U					
Nitrate as Nitrogen in mg/L			5 UJ					
Nitrite as Nitrogen in mg/L			5 U					
Practical Salinity (Calculated) in PSU								
Sulfate in mg/L			601	296	20 U	266	10 U	10 U
Sulfide in mg/L			7.57	82.7	0.64	0.05 U	0.5 U	0.05 U
Total Calcium in mg/l								
Total Dissolved Solids in mg/L			4,520	13,700	720			
Total Magnesium in mg/l								
Total Organic Carbon in ug/L					7,800	500 U	45,800	500 U
Total Suspended Solids in mg/L								
Field Parameters								
Conductivity in us/cm			6,342	1,779	12,240	26,300		1,250
Dissolved Oxygen in mg/L			0.39	0.36	1.4	2.9		2.66
Eh (ORP) in mVolts			-640.8	-477.7	-030	-125		-72
pH in pH units	6.2 - 8.5	6.2 - 8.5	10.92	11.14	7.51	6.8		6.91
Salinity in g/L						15.8		0.1
Temperature in deg C			19.21	12.39	11.3	12		10.6
Turbidity in NTU			10	30				

Table 7-1E - Soil Vapor and Ambient Air Chemistry Data for Caustic Plume Subarea

GP West RI/FS 070188

			Soil Vapor							
Chemical Name	Unrestricted Soil Gas Screening Level	Industrial Soil Gas Screening Level	AS-03 05/28/2003 Pre-RI	AS-07 05/27/2003 Pre-RI	AS-12 05/28/2003 Pre-RI	AS-13 05/27/2003 Pre-RI	AS-14 05/28/2003 Pre-RI	AS-15 05/28/2003 Pre-RI	CP-MW01V 09/29/2009 RI	CP-MW02V 09/29/2009 RI
Mercury in ug/m3	1.4	3.0	**720.3**	0.158	0.142	0.779	0.143	0.117	0.01 U	0.02
Dimethylmercury in ug/m3			0.36	0.0084	0.0025	0.0025	0.0058	0.0011		

			Soil Vapor							
Chemical Name	Unrestricted Soil Gas Screening Level	Industrial Soil Gas Screening Level	CP-MW03V 09/29/2009 RI	CP-MW06V 09/29/2009 RI	CP-MWA1V 09/29/2009 RI	CP-MWA2V 09/29/2009 RI	CP-MWB1V 09/29/2009 RI	CP-MWC1V 09/29/2009 RI	CP-MWC2V 09/29/2009 RI	CP-VP01 04/01/2010 RI
Mercury in ug/m3	1.4	3.0	0.04	**339.9**	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.1
Dimethylmercury in ug/m3										

			Soil Vapor							
Chemical Name	Unrestricted Soil Gas Screening Level	Industrial Soil Gas Screening Level	CP-VP02 04/01/2010 RI	CP-VP03 04/01/2010 RI	CP-VP04 04/01/2010 RI	CP-VP05 02/18/2011 RI	CP-VP07 02/18/2011 RI	CP-VP08 02/18/2011 RI	CP-VP09 02/18/2011 RI	CP-VP10 02/18/2011 RI
Mercury in ug/m3	1.4	3.0	0.01	0.05	0.89	0.022	0.025	0.013	0.028	0.01
Dimethylmercury in ug/m3										

			Ambient Air	
Chemical Name	Unrestricted Air Screening Level	Industrial Air Screening Level	BG-AA01 02/19/2011 RI	CP-AA01 02/18/2011 RI
Mercury in ug/m3	0.14	0.3	0.003	1.28

Table 7-2A - Soil Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
AS-05	AS-05SO-A	05/28/03	0 to 2.5 feet	0.099				
AS-05	AS-05SO-B	05/28/03	2.5 to 5 feet	***2.134***				
AS-05	AS-05SO-C	05/28/03	5 to 7.5 feet	***0.522***				
AS-05	AS-05SO-D	05/28/03	7.5 to 10 feet	***2.251***				
AS-06	AS-06SO-A	05/28/03	0 to 2.5 feet	0.017				
AS-06	AS-06SO-B	05/28/03	2.5 to 5 feet	0.045				
AS-06	AS-06SO-C	05/28/03	5 to 7.5 feet	0.05				
AS-06	AS-06SO-D	05/28/03	7.5 to 10 feet	***0.488***				
AS-07	AS-07SO-A	05/28/03	0 to 2.5 feet	***0.211***				
AS-07	AS-07SO-B	05/28/03	2.5 to 5 feet	***0.279***				
AS-07	AS-07SO-C	05/28/03	5 to 7.5 feet	***4.567***				
AS-07	AS-07SO-D	05/28/03	7.5 to 10 feet	***1.031***				
AS-12,13,14,15	AS-12, AS-13, AS-14, and AS-15 Composite	05/28/03	1 to 5 feet	***10.2***	0.00346			
AS-17	AS-17SO-A	05/28/03	0 to 2.5 feet	***1.036***				
AS-17	AS-17SO-B	05/28/03	2.5 to 5 feet	***3.39***				
AS-17	AS-17SO-C	05/28/03	5 to 7.5 feet	***6.358***				
AS-17	AS-17SO-D	05/28/03	7.5 to 10 feet	***4.992***				
AS-18	AS-18SO-A	05/28/03	0 to 2.5 feet	0.045				
AS-18	AS-18SO-B	05/28/03	2.5 to 5 feet	0.035				
AS-18	AS-18SO-C	05/28/03	5 to 7.5 feet	0.042				
AS-18	AS-18SO-D	05/28/03	7.5 to 10 feet	0.062				
BT-I	BT-I-5-6.5	01/11/93	5 to 6.5 feet	***190***				
BT-I	BT-I-7.5-9	01/11/93	7.5 to 9 feet	***180***				
BT-I	BT-I-10-11.5	01/11/93	10 to 11.5 feet	***330***				0.0039
BT-I	BT-I-13.5-15	01/11/93	13.5 to 15 feet	***1.8***				
BT-XI	BT-XI-2.5-4	01/13/93	2.5 to 4 feet	***39***				
BT-XI	BT-XI-5-6.5	01/13/93	5 to 6.5 feet	***2500***				
BT-XI	BT-XI-7.5-9	01/13/93	7.5 to 9 feet	***12000***				0.048
BT-XI	BT-XI-10-11.5	01/13/93	10 to 11.5 feet	***39***				
BT-XI	BT-XI-15-16.5	01/13/93	15 to 16.5 feet	***23***				
BT-XII	BT-XII-5-5.5	01/13/93	5 to 5.5 feet	***6.2***				
BT-XII	BT-XII-5.5-6	01/13/93	5.5 to 6 feet	***200***				
CD-SB01	CD-SB01-1	07/19/04	0 to 4 feet	0.06				
CD-SB01	CD-SB01-3	07/19/04	8 to 12 feet	***0.15***				
CD-SB02	CD-SB02-1	07/19/04	0 to 4 feet	***3.12***				
CD-SB02	CD-SB02-3	07/19/04	8 to 12 feet	***0.25***				
CD-SB02	CD-SB02-4	07/19/04	12 to 16 feet	***0.17***				
CP-MW03	CP-MW03-1.5-2.5	09/16/09	1.5 to 2.5 feet	***0.709***				
CP-MW03	CP-MW03-13-15	09/16/09	13 to 15 feet	***1050***				
CP-MW05	CP-MW05-2.5-4	09/17/09	2.5 to 4 feet	***32.2***				
CP-MW05	CP-MW05-5-6.5	09/17/09	5 to 6.5 feet	***4.67***				
CP-MW05	CP-MW05-7.5-9	09/17/09	7.5 to 9 feet	***23.7***				
CP-MW05	CP-MW05-10-11.5	09/17/09	10 to 11.5 feet	***101***				
CP-MW05	CP-MW05-12.5-14	09/17/09	12.5 to 14 feet	***375***				
CP-MW05	CP-MW05-15-16.5	09/17/09	15 to 16.5 feet	***14.6***				
CP-MW05	CP-MW05-17.5-19	09/17/09	17.5 to 19 feet	***33.8***				
CP-MW05	CP-MW05-20-21.5	09/17/09	20 to 21.5 feet	***4.02***				

Table 7-2A - Soil Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
CP-MW05	CP-MW05-22-23	09/21/09	22 to 23 feet	0.078				
CP-MW05	CP-MW05-26-27	09/21/09	26 to 27 feet	0.031				
CP-MW05	CP-MW05-38-39	09/21/09	38 to 39 feet	0.014 J				
CP-MW05	CP-MW05-30-31	09/21/09	30 to 31 feet	0.015 J				
CP-MW05	CP-MW05-34-35	09/21/09	34 to 35 feet	0.019				
EMW-14S	EMW-14S-5	11/24/93	5 to 6.5 feet	***3.6***				
EMW-14S	EMW-14S-10	11/24/93	10 to 11.5 feet	***160***				
EMW-14S	EMW-14S-16	11/24/93	16 to 17.5 feet	***47***				
EMW-15S	EMW-15S-5	11/24/93	5 to 6.5 feet	***2.6***				
EMW-20S	EMW-20S-5	11/20/93	5 to 6.5 feet	***20***				
EMW-20S	EMW-20S-11	11/20/93	11 to 12.5 feet	***7.0***				
EMW-20S	EMW-20S-15	11/20/93	15 to 16.5 feet	***13***				
EMW-29D	EMW-29D-08	06/09/93	8 to 9.5 feet	0.12 U				
EMW-29D	EMW-29D-13	06/09/93	13 to 14.5 feet	***2.2***				
EMW-29D	EMW-29D-33	06/09/93	33 to 34.5 feet	***0.16***				
EMW-29D	EMW-29D-38	06/09/93	38 to 39.5 feet	0.12 U				
EMW-2S	EMW-2S-05	06/03/93	5 to 6.5 feet	***4.2***				0.0002
EMW-2S	EMW-2S-10	06/03/93	10 to 11.5 feet	***2.1***				
EMW-2S	EMW-2S-14	06/03/93	14 to 15.5 feet	***4.5***				
EMW-30D	EMW-30D-14	06/08/93	14 to 15.5 feet	0.0346	0.000015	0.00002 U	0.0346	0.0002 U
EMW-30D	EMW-30D-16	06/08/93	16 to 17.5 feet	0.11 U				
EMW-30D	EMW-30D-29	06/08/93	29 to 30.5 feet	***4.5***				
EMW-30D	EMW-30D-34	06/08/93	34 to 35.5 feet	0.12 U				
EMW-3S	EMW-3S-05	06/04/93	5 to 6.5 feet	0.12 U				
EMW-3S	EMW-3S-10	06/04/93	10 to 11.5 feet	0.12 U				
EMW-3S	EMW-3S-18	06/04/93	18 to 19.5 feet	0.12 U				
EMW-7S	EMW-7S-05	05/26/93	5 to 6.5 feet	0.11 U				
EMW-7S	EMW-7S-10	05/26/93	10 to 11.5 feet	***0.68***	0.004882	0.00002 U	***0.700***	
EMW-7S	EMW-7S-18	05/26/93	18 to 19.5 feet	***2.9***				
EMW-8S	EMW-8S-05	05/27/93	5 to 6.5 feet	***0.50***				
EMW-8S	EMW-8S-05D	05/27/93	5 to 6.5 feet	***0.56***				
EMW-8S	EMW-8S-18	05/27/93	18 to 19.5 feet	***1.4***				
EMW-9S	EMW-9S-05	05/26/93	5 to 6.5 feet	0.12 U				
EMW-9S	EMW-9S-10	05/26/93	10 to 11.5 feet	0.12 U				
EMW-9S	EMW-9S-10D	05/26/93	10 to 11.5 feet	0.12 U				
EMW-9S	EMW-9S-18	05/26/93	18 to 19.5 feet	0.13 U				
ESB-15S	ESB-15S-05	06/03/93	5 to 6.5 feet	0.11 U				
ESB-15S	ESB-15S-10	06/03/93	10 to 11.5 feet	***56***				0.0089
ESB-15S	ESB-15S-22	06/03/93	22 to 23.5 feet	***0.23***				
ESB-16S	ESB-16S-05	06/03/93	5 to 6.5 feet	***140***				
ESB-16S	ESB-16S-10	06/03/93	10 to 11.5 feet	***31***				0.0048
ESB-16S	ESB-16S-18	06/03/93	18 to 19.5 feet	***5.7***				
ESB-17S	ESB-17S-07	06/01/93	7 to 8.5 feet	***0.37***				
ESB-17S	ESB-17S-11	06/01/93	11 to 12.5 feet	***0.14***	0.001837	0.0015	***1.53***	
ESB-17S	ESB-17S-20	06/01/93	20 to 21.5 feet	***1.1***				
ESB-18S	ESB-18S-05	06/01/93	5 to 6.5 feet	***0.13***				
ESB-18S	ESB-18S-10	06/01/93	10 to 11.5 feet	***0.43***				
ESB-18S	ESB-18S-14	06/01/93	14 to 15.5 feet	***74***				
ESB-18S	ESB-18S-25	06/01/93	25 to 26.5 feet	0.11 U				

Table 7-2A - Soil Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
ESB-19S	ESB-19S-05	06/01/93	5 to 6.5 feet	***0.25***				
ESB-19S	ESB-19S-10	06/01/93	10 to 11.5 feet	***0.20***				
ESB-19S	ESB-19S-25	06/01/93	25 to 26.5 feet	0.12 U				
ESB-20S	ESB-20S-02	05/28/93	2 to 3.5 feet	***2500***				0.0056
ESB-20S	ESB-20S-05	05/28/93	5 to 6.5 feet	***5800***				0.03
ESB-20S	ESB-20S-14	05/28/93	14 to 15.5 feet	***260***				
ESB-20S	ESB-20S-20	05/28/93	20 to 21.5 feet	***31***				
ESB-21S	ESB-21S-09	05/27/93	9 to 10.5 feet	***0.23***				
ESB-21S	ESB-21S-25	05/28/93	25 to 26.5 feet	***1.3***				
ESB-22S	ESB-22S-05	05/27/93	5 to 6.5 feet	***0.21***				
ESB-22S	ESB-22S-10	05/27/93	10 to 11.5 feet	0.12 U				
ESB-22S	ESB-22S-15	05/27/93	15 to 16.5 feet	0.12 U				
ESB-23S	ESB-23S-05	05/25/93	5 to 6.5 feet	0.11 U				
ESB-23S	ESB-23S-13	05/25/93	13 to 14.5 feet	***0.46***				
ESB-23S	ESB-23S-17	05/25/93	17 to 18.5 feet	0.13 U				
ESB-31S	ESB-31S-05	05/28/93	5 to 6.5 feet	***2600***				
ESB-31S	ESB-31S-10	05/28/93	10 to 11.5 feet	***20***				
ESB-31S	ESB-31S-18	05/28/93	18 to 19.5 feet	***2.1***				
GF-SB01	GF-SB01-2	07/22/04	4 to 8 feet	0.04				
GF-SB01	GF-SB01-3	07/22/04	8 to 12 feet	0.06 U				
L1-MW01	FD-L1-2	12/16/10	7 to 9 feet	***1.22***				
L1-MW01	L1-MW01-3-4	12/16/10	3 to 4 feet	***0.195***				
L1-MW01	L1-MW01-7-9	12/16/10	7 to 9 feet	***1.02***				
L1-MW01	L1-MW01-11-13	12/16/10	11 to 13 feet	***3.72***				
L1-MW01	L1-MW01-14-15	12/16/10	14 to 15 feet	***51.5***				
L1-MW02	FD-L1-3	12/17/10	7 to 9 feet	***7.57***				
L1-MW02	L1-MW02-4-5	12/17/10	4 to 5 feet	***0.219***				
L1-MW02	L1-MW02-7-9	12/17/10	7 to 9 feet	***6.49***				
L1-MW02	L1-MW02-11-12	12/17/10	11 to 12 feet	***3.37***				
L1-MW02	L1-MW02-13-14	12/17/10	13 to 14 feet	0.075				
L1-MW02	L1-MW02-16-17	12/17/10	16 to 17 feet	***0.143***				
L1-MW03	FD-L1-1	12/15/10	7 to 9 feet	***0.120***				
L1-MW03	L1-MW03-4-5	12/15/10	4 to 5 feet	***3.01***				
L1-MW03	L1-MW03-7-9	12/15/10	7 to 9 feet	***0.121***				
L1-MW03	L1-MW03-11-12	12/15/10	11 to 12 feet	***0.356***				
L1-MW03	L1-MW03-13-14	12/15/10	13 to 14 feet	***0.256***				
L1-MW03	L1-MW03-15-16	12/15/10	15 to 16 feet	***0.147***				
L1-MW04	L1-MW04-3-4	12/16/10	3 to 4 feet	***62.0***				
L1-MW04	L1-MW04-5-7	12/16/10	5 to 7 feet	***48.7***				
L1-MW04	L1-MW04-8-10	12/16/10	8 to 10 feet	***1760***				0.0078
L1-MW04	L1-MW04-10-12	12/16/10	10 to 12 feet	***5.65***				
L1-MW04	L1-MW04-13-15	12/16/10	13 to 15 feet	***3.31***				
L1-MW05	L1-MW05-3-5	12/15/10	3 to 5 feet	***22.5***				
L1-MW05	L1-MW05-7-9	12/15/10	7 to 9 feet	***108***				0.0859
L1-MW05	L1-MW05-11-12	12/15/10	11 to 12 feet	***5.26***				
L1-MW05	L1-MW05-13-14	12/15/10	13 to 14 feet	***7.08***				
L1-MW05	L1-MW05-16-18	12/15/10	16 to 18 feet	***1.27***				

Table 7-2A - Soil Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
L1-MW06	L1-MW06-3-5	01/31/11	3 to 5 feet	0.031				
L1-MW06	L1-MW06-5-7	01/31/11	5 to 7 feet	***0.276***				
L1-MW06	L1-MW06-13-14	01/31/11	13 to 14 feet	0.065				
L1-MW06	L1-MW06-16-17	01/31/11	16 to 17 feet	***0.856***				
SITE-1	SITE-1-GP-CP-EX	07/01/98	0 to 0.5 feet	***38***				0.0005
SITE-2	SITE-2-GP-CP-EX	07/01/98	0 to 0.5 feet	***42***				0.0001 U
SITE-3	SITE-3-GP-CP-EX	07/01/98	0 to 0.5 feet	***82***				0.0007
SITE-4	SITE-4-GP-CP-EX	07/01/98	0 to 0.5 feet	***10***				0.0001 U
SITE-5	SITE-5-GP-CP-EX	07/01/98	0 to 0.5 feet	***21***				0.0001 U
SITE-6	SITE-6-GP-CP-EX	07/01/98	0 to 0.5 feet	***1***				0.0003
SITE-7	SITE-7-GP-CP-EX	07/01/98	0 to 0.5 feet	***18***				0.0001 U
SITE-8	SITE-8-GP-CP-EX	07/01/98	0 to 0.5 feet	***119***				0.0005
STB-01	STB-01-3.5-5	05/11/92	3.5 to 5 feet	***0.9***				
STB-01	STB-01-7.5-9	05/11/92	7.5 to 9 feet	0.1 U				
STB-01	STB-01-11.5-13	05/11/92	11.5 to 13 feet	***0.6***				
STB-01	STB-01-15-16.5	05/11/92	15 to 16.5 feet	***0.8***				
STB-02	STB-02-7.5-9	05/11/92	7.5 to 9 feet	***11***				
STB-02	STB-02-11.5-12	05/11/92	11.5 to 12 feet	***5.5***				
STB-03	STB-03-3.5-5	05/12/92	3.5 to 5 feet	***0.2***				
STB-03	STB-03-7.5-9	05/12/92	7.5 to 9 feet	***4.4***				
STB-03	STB-03-11.5-13	05/12/92	11.5 to 13 feet	***39***				
STB-12	STB-12-3.5-5	05/14/92	3.5 to 5 feet	***0.9***				
STB-12	STB-12-7.5-9	05/14/92	7.5 to 9 feet	***16***				
STB-13	STB-13-5-6.5	05/14/92	5 to 6.5 feet	***1.1***				
STB-14	STB-14-3.5-5	05/15/92	3.5 to 5 feet	***1.7***				
STB-14	STB-14-7.5-9	05/15/92	7.5 to 9 feet	***7.8***				
STB-14	STB-14-10.5-12	05/15/92	10.5 to 12 feet	***0.5***				
STB-14	STB-14-15-16.5	05/15/92	15 to 16.5 feet	0.1 U				
STB-15	STB-15-3.5-5	05/15/92	3.5 to 5 feet	***69***				
STB-15	STB-15-7.5-9	05/15/92	7.5 to 9 feet	***0.9***				
STB-16	STB-16-0.5-2	05/15/92	0.5 to 2 feet	***0.7***				
STB-16	STB-16-3.5-5	05/15/92	3.5 to 5 feet	***15***				
STB-16	STB-16-7.5-9	05/15/92	7.5 to 9 feet	***47***				
STB-21	STB-21-0-1.5	05/17/92	0 to 1.5 feet	***1.0***				
STB-21	STB-21-3.5-5	05/17/92	3.5 to 5 feet	***3.0***				

Table 7-2B - Soil Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	CD-SB01 (0-4 ft) 7/19/04 Pre-RI	CD-SB01 (8-12 ft) 7/19/04 Pre-RI	CD-SB02 (0-4 ft) 7/19/04 Pre-RI	CD-SB02 (8-12 ft) 7/19/04 Pre-RI	CD-SB02 (12-16 ft) 7/19/04 Pre-RI	EMW-02S (6-7.5 ft) 6/3/93 Pre-RI	EMW-3S (5-6.5 ft) 6/4/93 Pre-RI	EMW-7S (10-11.5 ft) 5/26/93 Pre-RI	EMW-29D (13-14.5 ft) 6/9/93 Pre-RI	EMW-30D (14-15.5 ft) 6/8/93 Pre-RI	ESB-17S (11-12.5 ft) 6/1/93 Pre-RI	GF-SB01 (4-8 ft) 7/22/04 Pre-RI	GF-SB01 (8-12 ft) 7/22/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)															
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	97 J	91	250 J	170 J	13 U							5.0 U	18
Oil Range Hydrocarbons in mg/kg	2,000	2,000	850 J	270	3,600 J	1,200 J	42							21	91
Total TPHs in mg/kg	2,000	2,000	947 J	361	3,850 J	1,370 J	55							23.5	109
Heavy Metals															
Arsenic in mg/kg	7	7	10 U	6 U	5 U	6 U	6 U							6 U	6 U
Cadmium in mg/kg	1	1	0.5 U	0.5	0.3	0.3	0.2 U							0.2 U	0.2 U
Chromium (Total) in mg/kg	260	260	26.0 J	26.8 J	22.2 J	19.2 J	23.3 J							50.0	25.9
Copper in mg/kg	36	36	22.8 J	24.7 J	32.2 J	35.6 J	30.2 J							23.8	13.4
Lead in mg/kg	81	81	5 U	28	5	7	6							80	4
Nickel in mg/kg	48	48	24	20	23	24	24							41	21
Zinc in mg/kg	85	85	46	42.6	56.6	60.1	61.1							45.5	54.5
Polycyclic Aromatic Hydrocarbons (PAHs)															
Acenaphthene in mg/kg	0.26	0.26				0.052	0.024 U								
Acenaphthylene in mg/kg						0.051 U	0.024 U								
Anthracene in mg/kg	3.5	3.5				0.051 U	0.024 U								
Benzo(g,h,i)perylene in mg/kg						0.051 U	0.024 U								
Fluoranthene in mg/kg	2.6	2.6				0.072	0.037								
Fluorene in mg/kg	0.37	0.37				0.069	0.024 U								
Phenanthrene in mg/kg						0.16	0.03								
Pyrene in mg/kg	16	16				0.052	0.028								
1-Methylnaphthalene in mg/kg	35	4,500				0.065	0.024 U								
2-Methylnaphthalene in mg/kg	320	14,000				0.1	0.024 U								
Naphthalene in mg/kg	1.6	1.6				0.051 U	0.024 U								
Total Naphthalenes in mg/kg						0.19	ND								
Benz(a)anthracene in mg/kg	0.12	0.12				0.051 U	0.024 U								
Benzo(a)pyrene in mg/kg	0.14	0.31				0.051 U	0.024 U								
Benzo(b)fluoranthene in mg/kg	0.38	0.38				0.051 U	0.024 U								
Benzo(k)fluoranthene in mg/kg	0.38	0.38				0.051 U	0.024 U								
Chrysene in mg/kg	0.13	0.13				0.11	0.024 U								
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58				0.051 U	0.024 U								
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1				0.051 U	0.024 U								
Total cPAHs TEQ in mg/kg	0.14	0.31				0.0394	ND								
Polychlorinated Biphenyls (PCBs)															
Aroclor 1016 in mg/kg						0.04 U	0.04 U								
Aroclor 1221 in mg/kg						0.04 U	0.04 U								
Aroclor 1232 in mg/kg						0.04 U	0.04 U								
Aroclor 1242 in mg/kg						0.04 U	0.04 U								
Aroclor 1248 in mg/kg						0.04 U	0.04 U								
Aroclor 1254 in mg/kg						0.04 U	0.04 U								
Aroclor 1260 in mg/kg						0.04 U	0.04 U								
Total PCBs in mg/kg	1	10				0.14 U	0.14 U								
Conventional Chemistry Parameters (including other metals)															
Chloride in mg/kg								1,010	150	4,360	202		6,940		
pH in pH units	2.5 - 11	2.5 - 11	8.34	7.50	8.16	7.37	7.44							7.72	6.99
Sulfide in mg/kg								10.9	0.20 U	54.8	0.20 U		0.20 U		
Total Organic Carbon in percent								0.70		2.2	3.0	0.010 U	0.66		

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AMW-01 10/01/09 RI	AMW-01 03/29/10 RI	AMW-01 12/16/10 RI	CF-MW01 09/30/09 RI	CF-MW01 09/30/09 Field Dup RI	CF-MW01 03/31/10 RI	CF-MW01 03/31/10 Field Dup RI	CF-MW02 09/30/09 RI	CF-MW02 03/31/10 RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	0.00109	0.00029 J	0.00319	0.00456 J	0.00239 J	0.00221 J	0.0049 J	0.0108	0.00503
Total Mercury in ug/L	0.059	0.059									
Mercury Speciation											
Dimethylmercury in ug/L											
Mercury (acid-labile) in ug/L											
Mercury (elemental) in ug/L	0.89	1.9									
Methylmercury in ug/L	0.025	0.025									
Field Parameters											
Conductivity in us/cm			2,031	3,402	625	40,970		38,920		10,810	8,021
Dissolved Oxygen in mg/L			2.8	0.45	0.53	0.74		0.56		0.83	2.51
Eh (ORP) in mVolts			-282.1	-224.4	-233	-257.4		-147.6		-225.8	-71.3
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.67	6.26	6.49	6.65		6.72		6.43	6.56
Practical Salinity (Calculated) in PSU			1.0	1.8		25.8		24.4		6.0	4.4
Salinity in g/L											
Temperature in deg C			15.7	9.99	11.8	16.95		13.21		19.2	13
Turbidity in NTU			5	10	10	10		20		20	

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW03 09/28/09 RI	CP-MW03 03/31/10 RI	CP-MW03 12/17/10 RI	CP-MW05 09/28/09 RI	CP-MW05 09/28/09 Field Dup RI	CP-MW05 03/31/10 RI	CP-MW10 04/05/10 RI	CP-MW10 12/16/10 RI	CP-MW11 04/05/10 RI
Mercury											
Dissolved Mercury in ug/L	0.059	0.059	0.763	0.391	0.48	0.00599	0.00439	0.0027	0.0297	0.00979	0.00414
Total Mercury in ug/L	0.059	0.059									
Mercury Speciation											
Dimethylmercury in ug/L											
Mercury (acid-labile) in ug/L											
Mercury (elemental) in ug/L	0.89	1.9									
Methylmercury in ug/L	0.025	0.025									
Field Parameters											
Conductivity in us/cm			14,580	8,454	10,120	28,600		27,380	4,954	40,010	5,183
Dissolved Oxygen in mg/L			0.23	0.65	0.65	0.53		0.67	2.15	2.56	1.28
Eh (ORP) in mVolts			-291.7	-141.8	-74.4	-278.2		-225.2	-88.9	-070	-91.2
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.2	7.27	6.99	7.52		7.48	6.89	7.03	6.72
Practical Salinity (Calculated) in PSU			8.3	4.6		17.4		16.5	2.6		2.7
Salinity in g/L											
Temperature in deg C			15.27	10.65	13.87	13.74		12.85	10.36	10.75	11.93
Turbidity in NTU			50	50	10	10			20		30

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-02S 07/08/93 Pre-RI	EMW-02S 12/09/93 Pre-RI	EMW-02S 10/01/09 RI	EMW-02S 04/05/10 RI	EMW-03S 07/08/93 Pre-RI	EMW-03S 07/20/93 Pre-RI	EMW-03S 12/09/93 Pre-RI	EMW-07S 07/20/93 Pre-RI	EMW-07S 09/30/09 RI	EMW-07S 03/31/10 RI
Mercury												
Dissolved Mercury in ug/L	0.059	0.059	0.22	0.53	2.39	1.63		0.2 U	0.2 U	0.2 U	0.00084 J	0.00113
Total Mercury in ug/L	0.059	0.059	7.744									
Mercury Speciation												
Dimethylmercury in ug/L			5.00E-06									
Mercury (acid-labile) in ug/L			0.601									
Mercury (elemental) in ug/L	0.89	1.9	0.000176									
Methylmercury in ug/L	0.025	0.025	0.06125									
Field Parameters												
Conductivity in us/cm			49,400	42,600	3,354	2,643	234,200		158,030		32,150	26,020
Dissolved Oxygen in mg/L			3.3	1.78	0.73	0.38	0.31		1.74		0.82	0.44
Eh (ORP) in mVolts			-113	-78	-356.9	-254.6	-44		36		-220.1	-139
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.04	6.47	7.66	8.88	6.14		5.67		6.51	6.48
Practical Salinity (Calculated) in PSU			31.8	27.0	1.7	1.3	214.3		125.7		19.7	15.6
Salinity in g/L			32.4	27.4			274.1		145.6			
Temperature in deg C			17.6	15.2	19.63	12.49	14.5		12.6		16.3	11.9
Turbidity in NTU					10	30					10	20

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-08S 07/07/93 Pre-RI	EMW-08S 12/16/93 Pre-RI	EMW-08S 09/29/09 RI	EMW-08S 03/31/10 RI	EMW-09S 07/07/93 Pre-RI	EMW-09S 12/08/93 Pre-RI	EMW-10S 07/07/93 Pre-RI	EMW-10S 07/07/93 Field Dup Pre-RI	EMW-10S 12/08/93 Pre-RI	EMW-10S 09/29/09 RI
Mercury												
Dissolved Mercury in ug/L	0.059	0.059	0.2 U	0.2 U	0.001 U	0.00046 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.00269
Total Mercury in ug/L	0.059	0.059							0.501			
Mercury Speciation												
Dimethylmercury in ug/L									1.00E-05 U			
Mercury (acid-labile) in ug/L									0.093			
Mercury (elemental) in ug/L	0.89	1.9							0.0015			
Methylmercury in ug/L	0.025	0.025							0.000863			
Field Parameters												
Conductivity in us/cm			1,250	14,280	10,770	9,711	1,330	3,580	10,330		10,360	10,570
Dissolved Oxygen in mg/L			1.51	2.05	0.63	0.6	6.9	2.95	4.73		2.41	1.23
Eh (ORP) in mVolts			170		-0230	-205.3	59	167	244		41	-290.1
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.08		6.84	6.78	8.51	6.04	5.84		6.18	6.5
Practical Salinity (Calculated) in PSU			0.6	8.1	6.0	5.4	0.7	1.9	5.7		5.8	5.9
Salinity in g/L			0.7				0.2	1.5	5.5			
Temperature in deg C			19.9	9.6	18.75	11.34	15.3	12.7	15.9		11.9	19.36
Turbidity in NTU					10	10						5

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-10S 04/05/10 RI	EMW-14S 12/09/93 Pre-RI	EMW-14S 10/01/09 RI	EMW-14S 04/05/10 RI	EMW-15S 12/16/93 Pre-RI	EMW-16S 12/16/93 Pre-RI	EMW-16S 07/26/04 Pre-RI	EMW-16S 09/30/09 RI	EMW-16S 03/30/10 RI	EMW-16S 12/16/10 RI
Mercury												
Dissolved Mercury in ug/L	0.059	0.059	0.00053 U	0.96	2.53	5.03	1.3	0.2 U	1 U	0.0628	0.109	
Total Mercury in ug/L	0.059	0.059										
Mercury Speciation												
Dimethylmercury in ug/L												
Mercury (acid-labile) in ug/L												
Mercury (elemental) in ug/L	0.89	1.9										
Methylmercury in ug/L	0.025	0.025										
Field Parameters												
Conductivity in us/cm			9,913	19,630	2,601	2,926	5,980	5,390	5,672	5,178	5,665	4,073
Dissolved Oxygen in mg/L			0.51	1.2	0.36	0.28	2.8	1.4	0.67	0.44	0.2	0.49
Eh (ORP) in mVolts			-64.5	-115	-332.1	-224			-224.5	-402	-254.5	-101.6
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.32	7.9	8.47	9.19			6.58	6.73	6.66	6.56
Practical Salinity (Calculated) in PSU			5.5	11.5	1.3	1.5	3.2	2.9	3.0	2.7	3.0	
Salinity in g/L				11.5								
Temperature in deg C			12.03	13.4	18.8	11.94	10.4	9.7	20.93	19.91	11.7	11.82
Turbidity in NTU			10		20	20				20	20	

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-20S 12/02/93 Pre-RI	EMW-20S 09/29/09 RI	EMW-20S 04/05/10 RI	EMW-29D 07/07/93 Pre-RI	EMW-29D 07/08/93 Pre-RI	EMW-29D 09/29/09 RI	EMW-29D 03/31/10 RI	EMW-30D 07/07/93 Pre-RI	EMW-30D 07/07/93 Field Dup Pre-RI	EMW-30D 12/08/93 Pre-RI
Mercury												
Dissolved Mercury in ug/L	0.059	0.059	0.2 U	0.0102	0.00172		0.2 U	0.00188	0.00507	0.2 U	0.2 U	0.2 U
Total Mercury in ug/L	0.059	0.059										
Mercury Speciation												
Dimethylmercury in ug/L												
Mercury (acid-labile) in ug/L												
Mercury (elemental) in ug/L	0.89	1.9										
Methylmercury in ug/L	0.025	0.025										
Field Parameters												
Conductivity in us/cm			15,400	13,800	13,400	6,730		4,863	4,447	8,150		2,680
Dissolved Oxygen in mg/L			2.26	0.48	0.73	3.69		0.38	0.76	1.97		1.35
Eh (ORP) in mVolts			-15	-233.3	-47.3	113		-305.2	-122.2	-7		82
pH in pH units	6.2 - 8.5	6.2 - 8.5	5.61	6.48	6.21	7.83		7.44	7.43	6.85		6.69
Practical Salinity (Calculated) in PSU			8.8	7.8	7.6	3.6		2.6	2.3	4.5		1.4
Salinity in g/L			8.7			3.3				4.2		0.9
Temperature in deg C			13.3	20.49	12.01	13.8		13.97	12.85	13.5		10.6
Turbidity in NTU				10	10			10	10			

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-MW01 12/19/10 RI	L1-MW01 01/31/11 RI	L1-MW02 12/19/10 RI	L1-MW02 01/31/11 RI	L1-MW02 01/31/11 Field Dup RI	L1-MW03 12/16/10 RI	L1-MW03 01/31/11 RI	L1-MW04 01/06/11 RI	L1-MW05 12/16/10 RI	L1-MW05 12/16/10 Field Dup RI
Mercury												
Dissolved Mercury in ug/L	0.059	0.059	0.46	14.6	35	2.09	2.06	0.025	0.0224	0.317	4.06	3.97
Total Mercury in ug/L	0.059	0.059										
Mercury Speciation												
Dimethylmercury in ug/L												
Mercury (acid-labile) in ug/L												
Mercury (elemental) in ug/L	0.89	1.9										
Methylmercury in ug/L	0.025	0.025										
Field Parameters												
Conductivity in us/cm			15,430	1,245	30,510	2,578		45,710	43,890	4,053	2,521	
Dissolved Oxygen in mg/L			0.28	0.3	0.13	0.53		1.87	0.96	0.58	0.82	
Eh (ORP) in mVolts			-160.5	-274.9	-128.2	-207.6		-64.6	-90.8	-590.9	-50.7	
pH in pH units	6.2 - 8.5	6.2 - 8.5	8.87	10.1	8.81	9		6.94	9.6	7.15	7.67	
Practical Salinity (Calculated) in PSU												
Salinity in g/L												
Temperature in deg C			11.55	10.39	12.27	11.05		12.07	8.02	12.12	11.08	
Turbidity in NTU			29.6		1,000			10		131		

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-MW06 01/31/11 RI	L1-WP01 12/16/10 RI	L1-WP01 01/31/11 RI	L1-WP01 02/01/11 RI	L1-WP02 01/31/11 RI	L1-WP02 02/01/11 RI	L1-WP03 01/31/11 RI	L1-WP03 02/01/11 RI
Mercury										
Dissolved Mercury in ug/L	0.059	0.059	0.432	1.34	0.125	0.0738	0.131	0.164	0.0511	0.0533
Total Mercury in ug/L	0.059	0.059								
Mercury Speciation										
Dimethylmercury in ug/L										
Mercury (acid-labile) in ug/L										
Mercury (elemental) in ug/L	0.89	1.9								
Methylmercury in ug/L	0.025	0.025								
Field Parameters										
Conductivity in us/cm			3,587	1,631	3,152	4,260	6,642	2,972	10,820	6,983
Dissolved Oxygen in mg/L			-0.1	5.71	5.12	6.06	0.69	1.94	1.07	3.96
Eh (ORP) in mVolts			-350.5	-62.4	-96.4	-112.5	-203.1	-120.3	-176.4	-114.6
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.8	7.82	7.5	7.7	8.5	8.4	8.0	8.2
Practical Salinity (Calculated) in PSU										
Salinity in g/L										
Temperature in deg C			12.79	7.12	6.02	6.19	7.44	7.02	6.72	6.84
Turbidity in NTU				40						

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LAW-01 05/20/92 Pre-RI	LAW-01 07/07/92 Pre-RI	LAW-01 07/08/93 Pre-RI	LAW-01 12/08/93 Pre-RI	LAW-01 09/29/09 RI	LAW-01 03/31/10 RI	LAW-01 12/16/10 RI	LAW-01 01/31/11 RI	LAW-02 05/20/92 Pre-RI	LAW-02 07/07/92 Pre-RI
Mercury												
Dissolved Mercury in ug/L	0.059	0.059	2	4	1.5	1.4	20.4	32.6	1.03	17.8	0.2 U	1 U
Total Mercury in ug/L	0.059	0.059	190	99	8.324						1	1 U
Mercury Speciation												
Dimethylmercury in ug/L					0.000295							
Mercury (acid-labile) in ug/L					0.341							
Mercury (elemental) in ug/L	0.89	1.9			0.000516							
Methylmercury in ug/L	0.025	0.025			0.073061							
Field Parameters												
Conductivity in us/cm					62,300	48,930	22,220	11,240	9,044	9,415		
Dissolved Oxygen in mg/L					1.33	1.15	0.47	0.56	1.31	0.18		
Eh (ORP) in mVolts					-169	-46	-300.7	-295.5	-178.1	-311		
pH in pH units	6.2 - 8.5	6.2 - 8.5			6.96	7.33	8.08	8.87	8.61	10.2		
Practical Salinity (Calculated) in PSU					41.3	31.5	13.2	6.3				
Salinity in g/L					41.9	32.4						
Temperature in deg C					14	11.3	15.44	10.12	12.17	10.33		
Turbidity in NTU							10	20	50			

Table 7-2C - Groundwater Mercury Data for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LAW-03 05/20/92 Pre-RI	LAW-03 07/07/92 Pre-RI	LAW-05 05/20/92 Pre-RI	LAW-05 07/07/92 Pre-RI	LAW-05 07/09/93 Pre-RI	LAW-05 12/16/93 Pre-RI	LAW-08 05/20/92 Pre-RI	LAW-08 07/07/92 Pre-RI	MG-MW03 03/29/10 RI	MG-MW03 12/16/10 RI
Mercury												
Dissolved Mercury in ug/L	0.059	0.059	0.3	2	0.2 U	1 U	9.4	2.7	0.2 U	1 U		
Total Mercury in ug/L	0.059	0.059	79	22	58	46			3	1 U		
Mercury Speciation												
Dimethylmercury in ug/L												
Mercury (acid-labile) in ug/L												
Mercury (elemental) in ug/L	0.89	1.9										
Methylmercury in ug/L	0.025	0.025										
Field Parameters												
Conductivity in us/cm							6,870				14,150	1,315
Dissolved Oxygen in mg/L							1.17				0.14	0.17
Eh (ORP) in mVolts							52				-21.6	-136
pH in pH units	6.2 - 8.5	6.2 - 8.5					7.97				7.33	6.53
Practical Salinity (Calculated) in PSU							3.7				8.1	
Salinity in g/L							2.2					
Temperature in deg C							19.5				13.8	14.2
Turbidity in NTU											50	

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AMW-01 12/16/10 RI	CF-MW01 09/30/09 RI	CF-MW01 09/30/09 Field Dup RI	CF-MW01 03/31/10 RI	CF-MW01 03/31/10 Field Dup RI	CF-MW02 09/30/09 RI	CF-MW02 03/31/10 RI	CP-MW03 09/28/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L				1,900	1,600	29 J	30 J	680	30 J	
Oil Range Hydrocarbons in ug/L				1,400	2,000	520 U	520 U	680	28 J	
Total TPHs in ug/L				3,300	3,600	289 J	290 J	1,360	58 J	
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals (other than Mercury)										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AMW-01 12/16/10 RI	CF-MW01 09/30/09 RI	CF-MW01 09/30/09 Field Dup RI	CF-MW01 03/31/10 RI	CF-MW01 03/31/10 Field Dup RI	CF-MW02 09/30/09 RI	CF-MW02 03/31/10 RI	CP-MW03 09/28/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3		0.061	0.049	0.038	0.039	0.032	0.024	
Acenaphthylene in ug/L				0.022 U	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U	
Anthracene in ug/L	9.6	9.6		0.027	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U	
Benzo(g,h,i)perylene in ug/L				0.0075 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U	
Fluoranthene in ug/L	3.3	3.3		0.096	0.058	0.042	0.046	0.021 J	0.025	
Fluorene in ug/L	3	3		0.037	0.022 J	0.018 J	0.018 J	0.019 J	0.015 J	
Phenanthrene in ug/L				0.096	0.061	0.045	0.049	0.025	0.03	
Pyrene in ug/L	15	15		0.069	0.042	0.022	0.027	0.015 J	0.023	
1-Methylnaphthalene in ug/L										
2-Methylnaphthalene in ug/L				0.016 J	0.0074 J	0.02 U	0.0062 J	0.046	0.021	
Naphthalene in ug/L	83	83		0.045	0.02 J	0.062	0.027	0.028	0.033	
Total Naphthalenes in ug/L				0.061	0.0274 J	0.072	0.0332	0.074	0.054	
Benz(a)anthracene in ug/L	0.02	0.02		0.019 J	0.01 J	0.02 U	0.02 U	0.0046 J	0.02 U	
Benzo(a)pyrene in ug/L	0.02	0.02		0.01 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U	
Benzo(b)fluoranthene in ug/L	0.02	0.02		0.017 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U	
Benzo(k)fluoranthene in ug/L	0.02	0.02		0.0096 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U	
Chrysene in ug/L	0.02	0.02		0.025	0.014 J	0.02 U	0.02 U	0.022 U	0.02 U	
Dibenzo(a,h)anthracene in ug/L	0.02	0.02		0.054	0.046 U	0.02 U	0.02 U	0.022 U	0.02 U	
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02		0.0087 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U	
Total cPAHs TEQ in ug/L	0.02	0.02		0.0211	0.0154	ND	ND	0.016	ND	
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in ug/L in ug/L										
Aroclor 1221 in ug/L										
Aroclor 1232 in ug/L										
Aroclor 1242 in ug/L										
Aroclor 1248 in ug/L										
Aroclor 1254 in ug/L										
Aroclor 1260 in ug/L										
Total PCBs in ug/L	0.1	0.1								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AMW-01 12/16/10 RI	CF-MW01 09/30/09 RI	CF-MW01 09/30/09 Field Dup RI	CF-MW01 03/31/10 RI	CF-MW01 03/31/10 Field Dup RI	CF-MW02 09/30/09 RI	CF-MW02 03/31/10 RI	CP-MW03 09/28/09 RI
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3			213							714
Bicarbonate in mg/L										
Bromide in mg/L										1.5 J
Carbon, Dissolved Organic (DOC) in mg/L			13 J							
Carbonate in mg/L										
Chloride in mg/L										4,140
Conductivity in umhos/cm			580							
Dissolved Calcium in mg/L										32.4
Dissolved Iron in mg/L			5.02							1.2
Dissolved Magnesium in mg/L										9.1
Dissolved Manganese in mg/L	0.1	0.1	0.0447							1.09
Dissolved Potassium in mg/L										14.4
Dissolved Sodium in mg/L										3,180
Fluoride in mg/L										4 U
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										2 U
Nitrite as Nitrogen in mg/L										2 U
Sulfate in mg/L			58.8							276
Sulfide in mg/L			6.94							0.346
Total Dissolved Solids in mg/L			431							8,520
Total Organic Carbon in ug/L										
Total Suspended Solids in mg/L				247	206	129 J	242 J	722	269	

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW03 03/31/10 RI	CP-MW03 12/17/10 RI	CP-MW10 12/16/10 RI	EMW-02S 07/08/93 Pre-RI	EMW-02S 12/09/93 Pre-RI	EMW-02S 10/01/09 RI	EMW-02S 04/05/10 RI	EMW-03S 12/09/93 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L										
Oil Range Hydrocarbons in ug/L										
Total TPHs in ug/L										
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals (other than Mercury)										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW03 03/31/10 RI	CP-MW03 12/17/10 RI	CP-MW10 12/16/10 RI	EMW-02S 07/08/93 Pre-RI	EMW-02S 12/09/93 Pre-RI	EMW-02S 10/01/09 RI	EMW-02S 04/05/10 RI	EMW-03S 12/09/93 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3								
Acenaphthylene in ug/L										
Anthracene in ug/L	9.6	9.6								
Benzo(g,h,i)perylene in ug/L										
Fluoranthene in ug/L	3.3	3.3								
Fluorene in ug/L	3	3								
Phenanthrene in ug/L										
Pyrene in ug/L	15	15								
1-Methylnaphthalene in ug/L										
2-Methylnaphthalene in ug/L										
Naphthalene in ug/L	83	83								
Total Naphthalenes in ug/L										
Benz(a)anthracene in ug/L	0.02	0.02								
Benzo(a)pyrene in ug/L	0.02	0.02								
Benzo(b)fluoranthene in ug/L	0.02	0.02								
Benzo(k)fluoranthene in ug/L	0.02	0.02								
Chrysene in ug/L	0.02	0.02								
Dibenzo(a,h)anthracene in ug/L	0.02	0.02								
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02								
Total cPAHs TEQ in ug/L	0.02	0.02								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in ug/L in ug/L										
Aroclor 1221 in ug/L										
Aroclor 1232 in ug/L										
Aroclor 1242 in ug/L										
Aroclor 1248 in ug/L										
Aroclor 1254 in ug/L										
Aroclor 1260 in ug/L										
Total PCBs in ug/L	0.1	0.1								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CP-MW03 03/31/10 RI	CP-MW03 12/17/10 RI	CP-MW10 12/16/10 RI	EMW-02S 07/08/93 Pre-RI	EMW-02S 12/09/93 Pre-RI	EMW-02S 10/01/09 RI	EMW-02S 04/05/10 RI	EMW-03S 12/09/93 Pre-RI
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3			846	964		1,270	1,230	862	768	621
Bicarbonate in mg/L										
Bromide in mg/L								0.3 J		
Carbon, Dissolved Organic (DOC) in mg/L				60	73					
Carbonate in mg/L										
Chloride in mg/L			2,160			20,200	16,800	700	391	3,530
Conductivity in umhos/cm				9,440	32,600					
Dissolved Calcium in mg/L			60.4			170	77	10.2	3.8	330
Dissolved Iron in mg/L				2.01				1.68		
Dissolved Magnesium in mg/L			39.6			85	33	1.9	0.56	100
Dissolved Manganese in mg/L	0.1	0.1		1.47		2.8	0.79	0.125		2.9
Dissolved Potassium in mg/L			25			58	34	3.81	2.22	90
Dissolved Sodium in mg/L			2,100			13,000	9,600	880	663	85,000
Fluoride in mg/L								0.39 J		
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L								5 U		
Nitrite as Nitrogen in mg/L								5 U		
Sulfate in mg/L			222	434	44.9	193	160	43	55.6	356
Sulfide in mg/L			0.025	0.03	2.18	0.45	0.05 U	0.643	2.06	0.05 U
Total Dissolved Solids in mg/L			5,260	6,500	22,500	27,000		2,380	1,640	
Total Organic Carbon in ug/L						13,100	2,200			1,800
Total Suspended Solids in mg/L										

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-07S 03/31/10 RI	EMW-08S 12/16/93 Pre-RI	EMW-08S 03/31/10 RI	EMW-09S 12/08/93 Pre-RI	EMW-10S 07/07/93 Pre-RI	EMW-10S 07/07/93 Field Dup Pre-RI	EMW-10S 12/08/93 Pre-RI	EMW-14S 12/09/93 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L			25 J		20 J					
Oil Range Hydrocarbons in ug/L			500 U		520 U					
Total TPHs in ug/L			275 J		280 J					
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals (other than Mercury)										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-07S 03/31/10 RI	EMW-08S 12/16/93 Pre-RI	EMW-08S 03/31/10 RI	EMW-09S 12/08/93 Pre-RI	EMW-10S 07/07/93 Pre-RI	EMW-10S 07/07/93 Field Dup Pre-RI	EMW-10S 12/08/93 Pre-RI	EMW-14S 12/09/93 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3								
Acenaphthylene in ug/L										
Anthracene in ug/L	9.6	9.6								
Benzo(g,h,i)perylene in ug/L										
Fluoranthene in ug/L	3.3	3.3								
Fluorene in ug/L	3	3								
Phenanthrene in ug/L										
Pyrene in ug/L	15	15								
1-Methylnaphthalene in ug/L										
2-Methylnaphthalene in ug/L										
Naphthalene in ug/L	83	83								
Total Naphthalenes in ug/L										
Benz(a)anthracene in ug/L	0.02	0.02								
Benzo(a)pyrene in ug/L	0.02	0.02								
Benzo(b)fluoranthene in ug/L	0.02	0.02								
Benzo(k)fluoranthene in ug/L	0.02	0.02								
Chrysene in ug/L	0.02	0.02								
Dibenzo(a,h)anthracene in ug/L	0.02	0.02								
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02								
Total cPAHs TEQ in ug/L	0.02	0.02								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in ug/L in ug/L										
Aroclor 1221 in ug/L										
Aroclor 1232 in ug/L										
Aroclor 1242 in ug/L										
Aroclor 1248 in ug/L										
Aroclor 1254 in ug/L										
Aroclor 1260 in ug/L										
Total PCBs in ug/L	0.1	0.1								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-07S 03/31/10 RI	EMW-08S 12/16/93 Pre-RI	EMW-08S 03/31/10 RI	EMW-09S 12/08/93 Pre-RI	EMW-10S 07/07/93 Pre-RI	EMW-10S 07/07/93 Field Dup Pre-RI	EMW-10S 12/08/93 Pre-RI	EMW-14S 12/09/93 Pre-RI
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3				100		1,040	866	834	845	1,030
Bicarbonate in mg/L										
Bromide in mg/L										
Carbon, Dissolved Organic (DOC) in mg/L										
Carbonate in mg/L										
Chloride in mg/L				3,420		650	3,260	2,970	3,340	26,000
Conductivity in umhos/cm										
Dissolved Calcium in mg/L				610		350	440	450	550	46
Dissolved Iron in mg/L										
Dissolved Magnesium in mg/L				320		280	580	570	610	13
Dissolved Manganese in mg/L	0.1	0.1		20		9	8	9	15	1.3
Dissolved Potassium in mg/L				28		10	29	30	28	12
Dissolved Sodium in mg/L				1,500		43	780	750	810	4,300
Fluoride in mg/L										
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										
Nitrite as Nitrogen in mg/L										
Sulfate in mg/L				327		199	99.4	169	137	245
Sulfide in mg/L				0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	1.9
Total Dissolved Solids in mg/L										
Total Organic Carbon in ug/L				1,500		500 U	235,500	14,300	7,400	5,100
Total Suspended Solids in mg/L			155		16					

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-14S 10/01/09 RI	EMW-14S 04/05/10 RI	EMW-15S 12/16/93 Pre-RI	EMW-16S 12/16/93 Pre-RI	EMW-16S 07/26/04 Pre-RI	EMW-16S 09/30/09 RI	EMW-16S 03/30/10 RI	EMW-16S 12/16/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L							420 J			
Diesel Range Hydrocarbons in ug/L							500	1,800	450	26 UJ
Oil Range Hydrocarbons in ug/L							500 U	720	58 J	520 UJ
Total TPHs in ug/L							750	2,520	508	286 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										40 UJ
Aliphatics C12-C16 (EPH) in ug/L										40 UJ
Aliphatics C16-C21 (EPH) in ug/L										40 UJ
Aliphatics C21-C34 (EPH) in ug/L										40 UJ
Aliphatics C8-C10 (EPH) in ug/L										40 UJ
Aromatics C10-C12 (EPH) in ug/L										40 UJ
Aromatics C12-C16 (EPH) in ug/L										40 UJ
Aromatics C16-C21 (EPH) in ug/L										62 J
Aromatics C21-C34 (EPH) in ug/L										40 UJ
Aromatics C8-C10 (EPH) in ug/L										40 UJ
Dissolved Metals (other than Mercury)										
Dissolved Arsenic in ug/L	5	5					42	15.7	0.17 U	
Dissolved Cadmium in ug/L	8.8	8.8					2 U	0.266	0.067 U	
Dissolved Chromium (III) in ug/L							4,530			
Dissolved Chromium (Total) in ug/L	260	260					4,750	2,690	3.9	
Dissolved Chromium (VI) in ug/L	50	50					224	50 U	50 U	
Dissolved Copper in ug/L	3.1	3.1					14	11.1	0.042 U	
Dissolved Lead in ug/L	8.1	8.1					2 U	0.462	0.1 U	
Dissolved Nickel in ug/L	8.2	8.2					27	23.9	1.67 U	
Dissolved Zinc in ug/L	81	81					20	11.1	1.67 U	

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-14S 10/01/09 RI	EMW-14S 04/05/10 RI	EMW-15S 12/16/93 Pre-RI	EMW-16S 12/16/93 Pre-RI	EMW-16S 07/26/04 Pre-RI	EMW-16S 09/30/09 RI	EMW-16S 03/30/10 RI	EMW-16S 12/16/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3					49	55	37	23
Acenaphthylene in ug/L							0.15	0.17 U	0.15	0.097 U
Anthracene in ug/L	9.6	9.6					6.0	4	3.6	2.3
Benzo(g,h,i)perylene in ug/L							0.38	0.36	0.43	0.15
Fluoranthene in ug/L	3.3	3.3					43	33	24	16
Fluorene in ug/L	3	3					42	47	30	19
Phenanthrene in ug/L							91	55	43	27
Pyrene in ug/L	15	15					31	26	18	8.1
1-Methylnaphthalene in ug/L							21			
2-Methylnaphthalene in ug/L							34	15	12	8.4
Naphthalene in ug/L	83	83					210	64	59	42
Total Naphthalenes in ug/L							265	79.0	71.0	50.4
Benz(a)anthracene in ug/L	0.02	0.02					8.7	4.5	4.2	2.1
Benzo(a)pyrene in ug/L	0.02	0.02					2.8	1.5	1.5	0.62
Benzo(b)fluoranthene in ug/L	0.02	0.02					4.4	3.2	2.8	1.2
Benzo(k)fluoranthene in ug/L	0.02	0.02					2.4	0.76	0.77	0.33
Chrysene in ug/L	0.02	0.02					4.7	1.7	1.8	0.76
Dibenzo(a,h)anthracene in ug/L	0.02	0.02					0.18	0.11	0.14	0.051
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02					0.36	0.35	0.39	0.13
Total cPAHs TEQ in ug/L	0.02	0.02					4.45	2.41	2.35	1.01
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in ug/L in ug/L							0.10 UJ			
Aroclor 1221 in ug/L							0.10 UJ			
Aroclor 1232 in ug/L							0.10 UJ			
Aroclor 1242 in ug/L							0.10 UJ			
Aroclor 1248 in ug/L							0.14 J			
Aroclor 1254 in ug/L							0.10 UJ			
Aroclor 1260 in ug/L							0.10 UJ			
Total PCBs in ug/L	0.1	0.1					0.44 J			

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-14S 10/01/09 RI	EMW-14S 04/05/10 RI	EMW-15S 12/16/93 Pre-RI	EMW-16S 12/16/93 Pre-RI	EMW-16S 07/26/04 Pre-RI	EMW-16S 09/30/09 RI	EMW-16S 03/30/10 RI	EMW-16S 12/16/10 RI
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3			512	549	1,080	2,160				
Bicarbonate in mg/L										
Bromide in mg/L			5 U							
Carbon, Dissolved Organic (DOC) in mg/L										
Carbonate in mg/L										
Chloride in mg/L			514	628	1,090	560				
Conductivity in umhos/cm										2,610
Dissolved Calcium in mg/L			5.78	6.96	89	960				
Dissolved Iron in mg/L			0.924				11.8			
Dissolved Magnesium in mg/L			0.638	0.609	38	200				
Dissolved Manganese in mg/L	0.1	0.1	0.158		0.81	7.2	6.57			
Dissolved Potassium in mg/L			1.79	2.06	27	57				
Dissolved Sodium in mg/L			531	712	1,000	540				
Fluoride in mg/L			0.44 J							
Formaldehyde in ug/L	1,600	1,600					17			
Nitrate + Nitrite in mg/L							0.500 U			
Nitrate as Nitrogen in mg/L			5 U				0.500 U			
Nitrite as Nitrogen in mg/L			5 U				0.500 U			
Sulfate in mg/L			23	21.7	10 U	100 U	735			
Sulfide in mg/L			1.19	0.769	0.5 U	1.25 U				
Total Dissolved Solids in mg/L			1,600	1,870						
Total Organic Carbon in ug/L					48,800	1,420,000				
Total Suspended Solids in mg/L							23	7.5	15.5	5 U

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-20S 12/02/93 Pre-RI	EMW-20S 04/05/10 RI	EMW-30D 12/08/93 Pre-RI	L1-MW01 12/19/10 RI	L1-MW01 01/31/11 RI	L1-MW02 12/19/10 RI	L1-MW02 01/31/11 RI	L1-MW02 01/31/11 Field Dup RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L				26 U						
Oil Range Hydrocarbons in ug/L				41 J						
Total TPHs in ug/L				67 J						
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals (other than Mercury)										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-20S 12/02/93 Pre-RI	EMW-20S 04/05/10 RI	EMW-30D 12/08/93 Pre-RI	L1-MW01 12/19/10 RI	L1-MW01 01/31/11 RI	L1-MW02 12/19/10 RI	L1-MW02 01/31/11 RI	L1-MW02 01/31/11 Field Dup RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3								
Acenaphthylene in ug/L										
Anthracene in ug/L	9.6	9.6								
Benzo(g,h,i)perylene in ug/L										
Fluoranthene in ug/L	3.3	3.3								
Fluorene in ug/L	3	3								
Phenanthrene in ug/L										
Pyrene in ug/L	15	15								
1-Methylnaphthalene in ug/L										
2-Methylnaphthalene in ug/L										
Naphthalene in ug/L	83	83								
Total Naphthalenes in ug/L										
Benz(a)anthracene in ug/L	0.02	0.02								
Benzo(a)pyrene in ug/L	0.02	0.02								
Benzo(b)fluoranthene in ug/L	0.02	0.02								
Benzo(k)fluoranthene in ug/L	0.02	0.02								
Chrysene in ug/L	0.02	0.02								
Dibenzo(a,h)anthracene in ug/L	0.02	0.02								
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02								
Total cPAHs TEQ in ug/L	0.02	0.02								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in ug/L in ug/L										
Aroclor 1221 in ug/L										
Aroclor 1232 in ug/L										
Aroclor 1242 in ug/L										
Aroclor 1248 in ug/L										
Aroclor 1254 in ug/L										
Aroclor 1260 in ug/L										
Total PCBs in ug/L	0.1	0.1								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-20S 12/02/93 Pre-RI	EMW-20S 04/05/10 RI	EMW-30D 12/08/93 Pre-RI	L1-MW01 12/19/10 RI	L1-MW01 01/31/11 RI	L1-MW02 12/19/10 RI	L1-MW02 01/31/11 RI	L1-MW02 01/31/11 Field Dup RI
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3					1,710	1,500		1,340		
Bicarbonate in mg/L						1,260		913		
Bromide in mg/L										
Carbon, Dissolved Organic (DOC) in mg/L						288	248	171	116	104
Carbonate in mg/L						240		422		
Chloride in mg/L					1,820					
Conductivity in umhos/cm						15,100		2,880		
Dissolved Calcium in mg/L			700		87					
Dissolved Iron in mg/L						3.78		5.68		
Dissolved Magnesium in mg/L			330		200					
Dissolved Manganese in mg/L	0.1	0.1	81		0.16	0.419		0.355		
Dissolved Potassium in mg/L			34		88					
Dissolved Sodium in mg/L			2,000		1,300					
Fluoride in mg/L										
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										
Nitrite as Nitrogen in mg/L										
Sulfate in mg/L					10 U	95		187		
Sulfide in mg/L					0.05 U	7.04	5.68	3.13	1.39	1.31
Total Dissolved Solids in mg/L			12,000		4,500	10,400		2,470		
Total Organic Carbon in ug/L					14,300					
Total Suspended Solids in mg/L				92						

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-MW03 12/16/10 RI	L1-MW03 01/31/11 RI	L1-MW04 01/06/11 RI	L1-MW05 12/16/10 RI	L1-MW05 12/16/10 Field Dup RI	L1-MW06 01/31/11 RI	L1-WP01 12/16/10 RI	L1-WP01 01/31/11 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L										
Oil Range Hydrocarbons in ug/L										
Total TPHs in ug/L										
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals (other than Mercury)										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-MW03 12/16/10 RI	L1-MW03 01/31/11 RI	L1-MW04 01/06/11 RI	L1-MW05 12/16/10 RI	L1-MW05 12/16/10 Field Dup RI	L1-MW06 01/31/11 RI	L1-WP01 12/16/10 RI	L1-WP01 01/31/11 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3								
Acenaphthylene in ug/L										
Anthracene in ug/L	9.6	9.6								
Benzo(g,h,i)perylene in ug/L										
Fluoranthene in ug/L	3.3	3.3								
Fluorene in ug/L	3	3								
Phenanthrene in ug/L										
Pyrene in ug/L	15	15								
1-Methylnaphthalene in ug/L										
2-Methylnaphthalene in ug/L										
Naphthalene in ug/L	83	83								
Total Naphthalenes in ug/L										
Benz(a)anthracene in ug/L	0.02	0.02								
Benzo(a)pyrene in ug/L	0.02	0.02								
Benzo(b)fluoranthene in ug/L	0.02	0.02								
Benzo(k)fluoranthene in ug/L	0.02	0.02								
Chrysene in ug/L	0.02	0.02								
Dibenzo(a,h)anthracene in ug/L	0.02	0.02								
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02								
Total cPAHs TEQ in ug/L	0.02	0.02								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in ug/L in ug/L										
Aroclor 1221 in ug/L										
Aroclor 1232 in ug/L										
Aroclor 1242 in ug/L										
Aroclor 1248 in ug/L										
Aroclor 1254 in ug/L										
Aroclor 1260 in ug/L										
Total PCBs in ug/L	0.1	0.1								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-MW03 12/16/10 RI	L1-MW03 01/31/11 RI	L1-MW04 01/06/11 RI	L1-MW05 12/16/10 RI	L1-MW05 12/16/10 Field Dup RI	L1-MW06 01/31/11 RI	L1-WP01 12/16/10 RI	L1-WP01 01/31/11 RI
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3			1,410		1,120	1,020	1,020		335	
Bicarbonate in mg/L										
Bromide in mg/L										
Carbon, Dissolved Organic (DOC) in mg/L			94	89.0	56.2	102	98	689	21	7.9
Carbonate in mg/L										
Chloride in mg/L										
Conductivity in umhos/cm			45,100		3,840	2,770			1,610	
Dissolved Calcium in mg/L										
Dissolved Iron in mg/L			25.1		0.602	30.7 J	2.89 J		0.191	
Dissolved Magnesium in mg/L										
Dissolved Manganese in mg/L	0.1	0.1	11.6		0.561	0.733 J	0.142 J		0.0032 J	
Dissolved Potassium in mg/L										
Dissolved Sodium in mg/L										
Fluoride in mg/L										
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										
Nitrite as Nitrogen in mg/L										
Sulfate in mg/L			86		437	112	112		182	
Sulfide in mg/L			2.38	0.0511	0.124	1.98	2.1	85.3	2.75	0.0493
Total Dissolved Solids in mg/L			35,000		2,670	2,780	3,040		1,060	
Total Organic Carbon in ug/L										
Total Suspended Solids in mg/L										

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-WP01 02/01/11 RI	L1-WP02 01/31/11 RI	L1-WP02 02/01/11 RI	L1-WP03 01/31/11 RI	L1-WP03 02/01/11 RI	LAW-01 07/08/93 Pre-RI	LAW-01 12/08/93 Pre-RI	LAW-01 09/29/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L										
Oil Range Hydrocarbons in ug/L										
Total TPHs in ug/L										
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals (other than Mercury)										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-WP01 02/01/11 RI	L1-WP02 01/31/11 RI	L1-WP02 02/01/11 RI	L1-WP03 01/31/11 RI	L1-WP03 02/01/11 RI	LAW-01 07/08/93 Pre-RI	LAW-01 12/08/93 Pre-RI	LAW-01 09/29/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3								
Acenaphthylene in ug/L										
Anthracene in ug/L	9.6	9.6								
Benzo(g,h,i)perylene in ug/L										
Fluoranthene in ug/L	3.3	3.3								
Fluorene in ug/L	3	3								
Phenanthrene in ug/L										
Pyrene in ug/L	15	15								
1-Methylnaphthalene in ug/L										
2-Methylnaphthalene in ug/L										
Naphthalene in ug/L	83	83								
Total Naphthalenes in ug/L										
Benz(a)anthracene in ug/L	0.02	0.02								
Benzo(a)pyrene in ug/L	0.02	0.02								
Benzo(b)fluoranthene in ug/L	0.02	0.02								
Benzo(k)fluoranthene in ug/L	0.02	0.02								
Chrysene in ug/L	0.02	0.02								
Dibenzo(a,h)anthracene in ug/L	0.02	0.02								
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02								
Total cPAHs TEQ in ug/L	0.02	0.02								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in ug/L in ug/L										
Aroclor 1221 in ug/L										
Aroclor 1232 in ug/L										
Aroclor 1242 in ug/L										
Aroclor 1248 in ug/L										
Aroclor 1254 in ug/L										
Aroclor 1260 in ug/L										
Total PCBs in ug/L	0.1	0.1								

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	L1-WP01 02/01/11 RI	L1-WP02 01/31/11 RI	L1-WP02 02/01/11 RI	L1-WP03 01/31/11 RI	L1-WP03 02/01/11 RI	LAW-01 07/08/93 Pre-RI	LAW-01 12/08/93 Pre-RI	LAW-01 09/29/09 RI
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3								1,090	652	1,620
Bicarbonate in mg/L										
Bromide in mg/L										2.6 J
Carbon, Dissolved Organic (DOC) in mg/L			7.88	29	22.6	17.9	18.6			
Carbonate in mg/L										
Chloride in mg/L								24,100	133,000	6,900
Conductivity in umhos/cm										
Dissolved Calcium in mg/L								260	210	40.2
Dissolved Iron in mg/L										3.26
Dissolved Magnesium in mg/L								100	88	18.8
Dissolved Manganese in mg/L	0.1	0.1						7.9	3.4	0.559
Dissolved Potassium in mg/L								40	56	26.2
Dissolved Sodium in mg/L								12,000	16,000	2,560
Fluoride in mg/L										0.87 J
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										5 U
Nitrite as Nitrogen in mg/L										10 U
Sulfate in mg/L								142	733	110
Sulfide in mg/L			0.0056	3.78	3.08	0.0262	0.135	8.5	0.05 U	14.6
Total Dissolved Solids in mg/L								25,000		14,600
Total Organic Carbon in ug/L								4,500	500 U	
Total Suspended Solids in mg/L										

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LAW-01 03/31/10 RI	LAW-01 12/16/10 RI	LAW-01 01/31/11 RI	LAW-05 12/16/93 Pre-RI	MG-MW03 03/29/10 RI	MG-MW03 12/16/10 RI
Total Petroleum Hydrocarbons (TPH)								
Gasoline Range Hydrocarbons in ug/L								
Diesel Range Hydrocarbons in ug/L							200 U	26 J
Oil Range Hydrocarbons in ug/L							630 U	520 UJ
Total TPHs in ug/L							ND	286 J
Extractable Petroleum Hydrocarbons								
Aliphatics C10-C12 (EPH) in ug/L								40 U
Aliphatics C12-C16 (EPH) in ug/L								40 U
Aliphatics C16-C21 (EPH) in ug/L								40 U
Aliphatics C21-C34 (EPH) in ug/L								40 U
Aliphatics C8-C10 (EPH) in ug/L								40 U
Aromatics C10-C12 (EPH) in ug/L								90
Aromatics C12-C16 (EPH) in ug/L								50
Aromatics C16-C21 (EPH) in ug/L								60
Aromatics C21-C34 (EPH) in ug/L								40 U
Aromatics C8-C10 (EPH) in ug/L								40 U
Dissolved Metals (other than Mercury)								
Dissolved Arsenic in ug/L	5	5						
Dissolved Cadmium in ug/L	8.8	8.8						
Dissolved Chromium (III) in ug/L								
Dissolved Chromium (Total) in ug/L	260	260						
Dissolved Chromium (VI) in ug/L	50	50						
Dissolved Copper in ug/L	3.1	3.1						
Dissolved Lead in ug/L	8.1	8.1						
Dissolved Nickel in ug/L	8.2	8.2						
Dissolved Zinc in ug/L	81	81						

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LAW-01 03/31/10 RI	LAW-01 12/16/10 RI	LAW-01 01/31/11 RI	LAW-05 12/16/93 Pre-RI	MG-MW03 03/29/10 RI	MG-MW03 12/16/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)								
Acenaphthene in ug/L	3.3	3.3					20	26
Acenaphthylene in ug/L							0.07 U	0.091 U
Anthracene in ug/L	9.6	9.6					1.5	1.8
Benzo(g,h,i)perylene in ug/L							0.039	0.038
Fluoranthene in ug/L	3.3	3.3					4.2	5.9
Fluorene in ug/L	3	3					15	18
Phenanthrene in ug/L							19	24
Pyrene in ug/L	15	15					3	3.5
1-Methylnaphthalene in ug/L								
2-Methylnaphthalene in ug/L							5	8.2
Naphthalene in ug/L	83	83					87	160
Total Naphthalenes in ug/L							92	168.2
Benz(a)anthracene in ug/L	0.02	0.02					0.51	0.67
Benzo(a)pyrene in ug/L	0.02	0.02					0.13	0.16
Benzo(b)fluoranthene in ug/L	0.02	0.02					0.28	0.33
Benzo(k)fluoranthene in ug/L	0.02	0.02					0.063	0.09
Chrysene in ug/L	0.02	0.02					0.39	0.69
Dibenzo(a,h)anthracene in ug/L	0.02	0.02					0.013 J	0.015 J
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02					0.022	0.026
Total cPAHs TEQ in ug/L	0.02	0.02					0.223	0.28
Polychlorinated Biphenyls (PCBs)								
Aroclor 1016 in ug/L in ug/L								
Aroclor 1221 in ug/L								
Aroclor 1232 in ug/L								
Aroclor 1242 in ug/L								
Aroclor 1248 in ug/L								
Aroclor 1254 in ug/L								
Aroclor 1260 in ug/L								
Total PCBs in ug/L	0.1	0.1						

Table 7-2D - Groundwater Chemistry Data (non-Mercury) for Confined Nearshore Fill/Chemfix Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LAW-01 03/31/10 RI	LAW-01 12/16/10 RI	LAW-01 01/31/11 RI	LAW-05 12/16/93 Pre-RI	MG-MW03 03/29/10 RI	MG-MW03 12/16/10 RI
Conventional Chemistry Parameters (including other metals)								
Alkalinity (Total) in mg/L as CaCO3			1,280	1,390		1,200		
Bicarbonate in mg/L								
Bromide in mg/L								
Carbon, Dissolved Organic (DOC) in mg/L				226	176			
Carbonate in mg/L								
Chloride in mg/L			2,960			865		
Conductivity in umhos/cm				9,890				
Dissolved Calcium in mg/L			24.3			80		
Dissolved Iron in mg/L				4.07				
Dissolved Magnesium in mg/L			9.87			22		
Dissolved Manganese in mg/L	0.1	0.1		0.306		0.28		
Dissolved Potassium in mg/L			17.9			25		
Dissolved Sodium in mg/L			3,570			970		
Fluoride in mg/L								
Formaldehyde in ug/L	1,600	1,600						
Nitrate + Nitrite in mg/L								
Nitrate as Nitrogen in mg/L								
Nitrite as Nitrogen in mg/L								
Sulfate in mg/L			166	154		10 U		
Sulfide in mg/L			15.1	10.33	6.98	0.5 U		
Total Dissolved Solids in mg/L			7,840	6,770				
Total Organic Carbon in ug/L						45,800		
Total Suspended Solids in mg/L							86	15

Table 7-2E - Soil Vapor Chemistry Data for Chemfix

GP West RI/FS 070188

Chemical Name	Unrestricted Air (Soil Vapor) Screening Level	Industrial Air (Soil Vapor) Screening Level	AS-07 5/27/2003 Pre-RI	AS-12 5/28/2003 Pre-RI	AS-13 5/27/2003 Pre-RI	AS-14 5/28/2003 Pre-RI	AS-15 5/28/2003 Pre-RI	CP-MW03V 9/29/2009 RI	CP-VP02 4/1/2010 RI
Mercury									
Mercury in ug/m3	1.4	3.0	0.158	0.142	0.779	0.143	0.117	0.04	0.01
Dimethylmercury in ug/m3			0.0084	0.0025	0.0025	0.0058	0.0011		

Table 7-3A - Soil Mercury Data for Stormwater Swale Subarea

GP West RI/FS 070188

				Mercury in mg/kg
			Unrestricted Soil Screening Level	***0.1 mg/kg***
			Industrial Soil Screening Level	0.1 mg/kg
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**	
B1	B1-S-122993	12/13/93	0 to 0.5 feet	***6.5***
B1	B1-D-122993	12/13/93	0.5 to 1 feet	***49***
B2	B2-S-122993	12/13/93	0 to 0.5 feet	***0.47***
B3	B3-S-122993	12/13/93	0 to 0.5 feet	***45***
BK-02	BK-02-0-6	03/31/92	0 to 0.5 feet	***3***
D1	D1-S-112093	11/20/93	0 to 0.5 feet	***63***
D1	D1-D-112093	11/20/93	0.5 to 1 feet	***73***
D2	D2-S-112093	11/20/93	0 to 0.5 feet	***39***
D2	D2-D-112093	11/20/93	0.5 to 1 feet	***14***
D3	D3-S-112093	11/20/93	0 to 0.5 feet	***530***
D3	D3-1-112093	11/20/93	1 to 1.5 feet	***13***
D3	D3-2-121393	12/13/93	2 to 2.5 feet	***5.4***
D4	D4-1-121393	12/13/93	1 to 1.5 feet	***2.6***
D4	D4-2-121393	12/13/93	2 to 2.5 feet	***2.2***
D5	D5-112093	11/20/93	0 to 0.5 feet	***14***
D5	D5-S-112093	11/20/93	0 to 0.5 feet	***31***
D5	D5-D-112093	11/20/93	0.5 to 1 feet	***5.3***
D6	D6-S-112093	11/20/93	0 to 0.5 feet	***2.5***
D6	D6-D-112093	11/20/93	0.5 to 1 feet	***4.7***
D7	D7-S-112093	11/20/93	0 to 0.5 feet	***41***
D7	D7-D-112093	11/20/93	0.5 to 1 feet	***3.5***
D8	D8-S-112093	11/20/93	0 to 0.5 feet	***45***
D8	D8-D-112093	11/20/93	0.5 to 1 feet	***3.7***
D9	D10-S-122993	12/13/93	0 to 0.5 feet	***68***
D9	D9-S-121393	12/13/93	0 to 0.5 feet	***21***
EMW-1S	EMW-1S-05	06/04/93	5 to 6.5 feet	0.14 U
EMW-1S	6-4-10	06/04/93	10 to 11.5 feet	0.12 U
EMW-1S	EMW-1S-10	06/04/93	10 to 11.5 feet	0.12 U
EMW-1S	EMW-1S-12	06/04/93	12 to 13.5 feet	***0.51***
EMW-4S	EMW-4S-05	06/02/93	5 to 6.5 feet	***0.15***
EMW-4S	EMW-4S-10	06/02/93	10 to 11.5 feet	***3.6***
EMW-4S	EMW-4S-15	06/02/93	15 to 16.5 feet	0.34 U
EMW-6S	EMW-6S-05	05/25/93	5 to 6.5 feet	***0.13***
EMW-6S	EMW-6S-10	05/25/93	10 to 11.5 feet	***1.5***
EMW-6S	EMW-6S-13	05/25/93	13 to 14.5 feet	***0.94***
EMW-6S	EMW-6S-19	05/25/93	19 to 20.5 feet	0.13 U
MG-MW02	MG-MW02-0-0.5	03/25/10	1 to 1.5 feet	***0.235***
MG-MW02	MG-MW02-0.5-1	03/25/10	1.5 to 2 feet	***0.515***
MG-MW02	MG-MW02-2-3	03/25/10	2 to 3 feet	0.054
MG-MW02	FD-MG01	03/25/10	5 to 6 feet	***0.514***
MG-MW02	MG-MW02-5-6	03/25/10	5 to 6 feet	***0.482***
MG-MW02	MG-MW02-8-9	03/25/10	8 to 9 feet	0.058

Table 7-3A - Soil Mercury Data for Stormwater Swale Subarea

GP West RI/FS 070188

				Mercury in mg/kg
			Unrestricted Soil Screening Level	***0.1 mg/kg***
			Industrial Soil Screening Level	0.1 mg/kg
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**	
SS-11	SS-11	05/25/93	0 to 0.5 feet	***127***
STB-06	STB-06-0-1.5	05/13/92	0 to 1.5 feet	***1.8***
STB-06	STB-06-3.5-5	05/13/92	3.5 to 5 feet	0.1 U
STB-06	STB-06-7.5-9	05/13/92	7.5 to 9 feet	0.1 U
STB-23	STB-23-0-1.5	05/17/92	0 to 1.5 feet	***0.5***
STB-23	STB-23-3.5-5	05/17/92	3.5 to 5 feet	0.1 U
STB-23	STB-23-7.5-9	05/17/92	7.5 to 9 feet	0.1
STB-25	STB-25-0-1.5	05/18/92	0 to 1.5 feet	0.1 U
STB-25	STB-25-3.5-5	05/18/92	3.5 to 5 feet	0.1 U
STB-25	STB-25-7.5-9	05/18/92	7.5 to 9 feet	***1.3***
SW-HA01	SW-HA01-0-0.5	03/24/10	0 to 0.5 feet	***2.06***
SW-HA01	SW-HA01-0.5-1	03/24/10	0.5 to 1 feet	***1.89***
SW-HA02	SW-HA02-0-0.5	03/24/10	0 to 0.5 feet	***0.794***
SW-HA02	SW-HA02-0.5-1	03/24/10	0.5 to 1 feet	***0.177***
SW-HA03	SW-HA03-0-0.5	03/24/10	0 to 0.5 feet	***3.41***
SW-HA03	SW-HA03-0.5-1	03/24/10	0.5 to 1 feet	***0.223***
SW-HA04	SW-HA04-0-0.5	03/24/10	0 to 0.5 feet	***0.764***
SW-HA04	SW-HA04-0.5-1	03/24/10	0.5 to 1 feet	***0.405***
SW-HA05	SW-HA05-0-0.5	03/25/10	0 to 0.5 feet	0.038
SW-HA05	SW-HA05-0.5-1	03/25/10	0.5 to 1 feet	***0.152***
SW-HA06	SW-HA06-0-0.5	03/25/10	0 to 0.5 feet	***0.701***
SW-HA06	SW-HA06-0.5-1	03/25/10	0.5 to 1 feet	0.057
SW-SB01	SW-SB01-0-0.5	03/25/10	0 to 0.5 feet	***0.509***
SW-SB01	SW-SB01-0.5-1	03/25/10	0.5 to 1 feet	***0.246***
SW-SB01	SW-SB01-2-3	03/25/10	2 to 3 feet	0.035
SW-SB01	SW-SB01-5-6	03/25/10	5 to 6 feet	0.064
SW-SB01	SW-SB01-8-9	03/25/10	8 to 9 feet	***0.128***
SW-SB02	FD-SW01	03/25/10	0 to 0.5 feet	***2.32***
SW-SB02	SW-SB02-0-0.5	03/25/10	0 to 0.5 feet	***3.61***
SW-SB02	SW-SB02-0.5-1	03/25/10	0.5 to 1 feet	***0.526***
SW-SB02	SW-SB02-2-3	03/25/10	2 to 3 feet	***0.726***
SW-SB02	SW-SB02-5-6	03/25/10	5 to 6 feet	***1.67***
SW-SB02	SW-SB02-8-9	03/25/10	8 to 9 feet	***1.08***
SW-SB02	SW-SB02-11-12	03/25/10	11 to 12 feet	***0.66***
SW-SB02	SW-SB02-14-15	03/25/10	14 to 15 feet	***0.136***
TRENCH	TRENCH SOIL	11/20/93	0 to 0.5 feet	***48***

Table 7-3B - Groundwater Chemistry Data for Stormwater Swale Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-01S 07/08/93 Pre-RI	EMW-01S 12/09/93 Pre-RI	EMW-01S 05/29/03 Pre-RI	EMW-01S 10/02/09 RI	EMW-01S 03/31/10 RI	EMW-04S 07/08/93 Pre-RI	EMW-04S 12/09/93 Pre-RI	EMW-04S 12/09/93 Field Dup Pre-RI	EMW-04S 10/02/09 RI	EMW-04S 03/31/10 RI
Total Petroleum Hydrocarbons (TPH)												
Diesel Range Hydrocarbons in ug/L												
Oil Range Hydrocarbons in ug/L												
Total TPHs in ug/L												
Heavy Metals												
Dissolved Mercury in ug/L	0.059	0.059	0.2 U	0.2 U		0.0167	0.0079	0.2 U	0.2 U	0.2 U	0.00323	0.00094 U
Total Mercury in ug/L	0.059	0.059										
Polycyclic Aromatic Hydrocarbons (PAHs)												
Acenaphthene in ug/L	3.3	3.3										
Acenaphthylene in ug/L												
Anthracene in ug/L	9.6	9.6										
Benzo(g,h,i)perylene in ug/L												
Fluoranthene in ug/L	3.3	3.3										
Fluorene in ug/L	3	3										
Phenanthrene in ug/L												
Pyrene in ug/L	15	15										
2-Methylnaphthalene in ug/L												
Naphthalene in ug/L	83	83										
Total Naphthalenes in ug/L												
Dibenzofuran in ug/L												
Benz(a)anthracene in ug/L	0.02	0.02										
Benzo(a)pyrene in ug/L	0.02	0.02										
Benzo(b)fluoranthene in ug/L	0.02	0.02										
Benzo(k)fluoranthene in ug/L	0.02	0.02										
Chrysene in ug/L	0.02	0.02										
Dibenzo(a,h)anthracene in ug/L	0.02	0.02										
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02										
Total cPAHs TEQ in ug/L	0.02	0.02										

Table 7-3B - Groundwater Chemistry Data for Stormwater Swale Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-01S 07/08/93 Pre-RI	EMW-01S 12/09/93 Pre-RI	EMW-01S 05/29/03 Pre-RI	EMW-01S 10/02/09 RI	EMW-01S 03/31/10 RI	EMW-04S 07/08/93 Pre-RI	EMW-04S 12/09/93 Pre-RI	EMW-04S 12/09/93 Field Dup Pre-RI	EMW-04S 10/02/09 RI	EMW-04S 03/31/10 RI
Conventional Chemistry Parameters (including other metals)												
Alkalinity (Bicarbonate) in mg/L as CaCO3				334					1,020	1,010		
Alkalinity (Carbonate) in mg/L as CaCO3				5 U					5 U	5 U		
Alkalinity (Hydroxide) in mg/L as CaCO3				5 U					5 U	5 U		
Alkalinity (Total) in mg/L as CaCO3				334					1,020	1,010		
Chloride in mg/L				180					650	625		
Dissolved Calcium in mg/L				51					160	160		
Dissolved Magnesium in mg/L				8.1					77	73		
Dissolved Manganese in mg/L	0.1	0.1		1.4					0.51	0.53		
Dissolved Potassium in mg/L				3.4					43	43		
Dissolved Sodium in mg/L				210					530	520		
Sulfate in mg/L				10 U					10 U	10 U		
Sulfide in mg/L				0.05 U					0.05 U	0.05 U		
Total Dissolved Solids in mg/L												
Total Organic Carbon in ug/L				600					1,600	3,800		
Total Suspended Solids in mg/L												
Field Parameters												
Conductivity in us/cm			2,280	1,410		1,347	1,175	4,330	3,700		2,365	2,161
Dissolved Oxygen in mg/L			1.48	1.93		0.74	0.39	2.4	1.59		0.53	0.37
Eh (ORP) in mVolts			-99	-107		-294	-129.3	-66	-51		-302.6	-128.4
pH in pH units	8.5	8.5	7.31	7.31		6.97	6.95	6.6	6.77		6.45	6.47
Practical Salinity (Calculated) in PSU			1.2	0.7		0.7	0.6	2.3	1.9		1.2	1.1
Salinity in g/L			0.7	0.2				1.9	1.5			
Temperature in deg C			19.3	12.7		19.79	11.7	16.2	12.6		20.79	11.82
Turbidity in NTU						20	20				10	20

Table 7-3B - Groundwater Chemistry Data for Stormwater Swale Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-06S 07/08/93 Pre-RI	EMW-06S 09/28/09 RI	EMW-06S 03/29/10 RI	EMW-06S 03/31/10 RI	LAW-06 05/20/92 Pre-RI	LAW-06 07/07/92 Pre-RI	LAW-06 07/08/93 Pre-RI	LAW-06 12/09/93 Pre-RI	MG-MW02 03/29/10 RI
Total Petroleum Hydrocarbons (TPH)											
Diesel Range Hydrocarbons in ug/L				850	25 U						26 U
Oil Range Hydrocarbons in ug/L				530 U	520 U						510 U
Total TPHs in ug/L				1,115	ND						ND
Heavy Metals											
Dissolved Mercury in ug/L	0.059	0.059	0.2 U				0.2 U	1 U	0.2 U	0.3	
Total Mercury in ug/L	0.059	0.059					2	1			
Polycyclic Aromatic Hydrocarbons (PAHs)											
Acenaphthene in ug/L	3.3	3.3		0.096		0.16					0.82
Acenaphthylene in ug/L				0.02 U		0.019 U					0.02 U
Anthracene in ug/L	9.6	9.6		0.014 J		0.019 U					0.042
Benzo(g,h,i)perylene in ug/L				0.02 U		0.019 U					0.0054 J
Fluoranthene in ug/L	3.3	3.3		0.024		0.029					0.14
Fluorene in ug/L	3	3		0.02 U		0.052					0.12
Phenanthrene in ug/L				0.016 J		0.022					0.26
Pyrene in ug/L	15	15		0.022		0.018 J					0.16
2-Methylnaphthalene in ug/L				0.013 J		0.026					0.12
Naphthalene in ug/L	83	83		0.061		0.16					1.1
Total Naphthalenes in ug/L				0.074		0.186					1.22
Dibenzofuran in ug/L				0.02 U		0.019 U					0.057
Benz(a)anthracene in ug/L	0.02	0.02		0.02 U		0.019 U					0.018 J
Benzo(a)pyrene in ug/L	0.02	0.02		0.02 U		0.019 U					0.0088 J
Benzo(b)fluoranthene in ug/L	0.02	0.02		0.02 U		0.019 U					0.013 J
Benzo(k)fluoranthene in ug/L	0.02	0.02		0.02 U		0.019 U					0.02 U
Chrysene in ug/L	0.02	0.02		0.02 U		0.019 U					0.011 J
Dibenzo(a,h)anthracene in ug/L	0.02	0.02		0.02 U		0.019 U					0.02 U
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02		0.02 U		0.019 U					0.02 U
Total cPAHs TEQ in ug/L	0.02	0.02		ND		ND					0.015 J

Table 7-3B - Groundwater Chemistry Data for Stormwater Swale Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-06S 07/08/93 Pre-RI	EMW-06S 09/28/09 RI	EMW-06S 03/29/10 RI	EMW-06S 03/31/10 RI	LAW-06 05/20/92 Pre-RI	LAW-06 07/07/92 Pre-RI	LAW-06 07/08/93 Pre-RI	LAW-06 12/09/93 Pre-RI	MG-MW02 03/29/10 RI
Conventional Chemistry Parameters (including other metals)											
Alkalinity (Bicarbonate) in mg/L as CaCO3										414	
Alkalinity (Carbonate) in mg/L as CaCO3										5 U	
Alkalinity (Hydroxide) in mg/L as CaCO3										5 U	
Alkalinity (Total) in mg/L as CaCO3										414	
Chloride in mg/L										131	
Dissolved Calcium in mg/L										110	
Dissolved Magnesium in mg/L										11	
Dissolved Manganese in mg/L	0.1	0.1								1.7	
Dissolved Potassium in mg/L										4.3	
Dissolved Sodium in mg/L										140	
Sulfate in mg/L										10 U	
Sulfide in mg/L										0.05 U	
Total Dissolved Solids in mg/L								970			
Total Organic Carbon in ug/L										500 U	
Total Suspended Solids in mg/L				7.5	195		400	47			25
Field Parameters											
Conductivity in us/cm			4,540	2,599	2,286				1,120	1,250	635
Dissolved Oxygen in mg/L			1.19	0.53	0.73				1.54	2.66	0.17
Eh (ORP) in mVolts			-82	-29.6	-22.8				-114	-72	2.5
pH in pH units	8.5	8.5	6.7	6.32	7.33				7.06	6.91	8.39
Practical Salinity (Calculated) in PSU			2.4	1.3	1.2				0.5	0.6	0.3
Salinity in g/L			2						0	0.1	
Temperature in deg C			15.9	19.69	11.68				18.5	10.6	11.27
Turbidity in NTU				10	20						15

Table 7-4A - Soil Mercury Data for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
AS-09	AS-09SO-A	05/28/03	0 to 2.5 feet	***0.357***				
AS-09	AS-09SO-B	05/28/03	2.5 to 5 feet	***0.108***				
AS-09	AS-09SO-C	05/28/03	5 to 7.5 feet	0.066				
AS-09	AS-09SO-D	05/28/03	7.5 to 10 feet	0.015				
AS-10	AS-10SO-A	05/28/03	0 to 2.5 feet	***30.6***	0.00312			
AS-10	AS-10SO-B	05/28/03	2.5 to 5 feet	***1.975***				
AS-10	AS-10SO-C	05/28/03	5 to 7.5 feet	***11.4***				
AS-10	AS-10SO-D	05/28/03	7.5 to 10 feet	***1344***				
AS-11	AS-11SO-A	05/28/03	0 to 2.5 feet	***4.51***				
AS-11	AS-11SO-B	05/28/03	2.5 to 5 feet	***0.302***				
AS-11	AS-11SO-C	05/28/03	5 to 7.5 feet	0.022				
AS-11	AS-11SO-D	05/28/03	7.5 to 10 feet	***0.101***				
BK-05	BK-05-0-6	07/06/92	0 to 0.5 feet	0.1 U				
EMW-13S	ESB-13S-05	06/02/93	5 to 6.5 feet	***320***				
EMW-13S	ESB-13S-10	06/02/93	10 to 11.5 feet	***58***				0.011
EMW-13S	ESB-13S-10D	06/02/93	10 to 11.5 feet	***290***				0.0037
EMW-13S	ESB-13S-15	06/02/93	15 to 16.5 feet	***2.8***				
ESB-24S	ESB-24S-05	06/02/93	5 to 6.5 feet	***0.12***				
ESB-24S	ESB-24S-10	06/02/93	10 to 11.5 feet	***0.12***				
ESB-24S	ESB-24S-14	06/02/93	14 to 15.5 feet	***0.37***				
ESB-25S	ESB-25S-05	06/02/93	5 to 6.5 feet	0.12 U				
ESB-25S	ESB-25S-10	06/02/93	10 to 11.5 feet	***0.40***				
ESB-25S	ESB-25S-18	06/02/93	18 to 19.5 feet	0.14 U				
ESB-26S	ESB-26S-05	06/02/93	5 to 6.5 feet	0.15 U				
ESB-26S	ESB-26S-10	06/02/93	10 to 11.5 feet	0.13 U				
ESB-26S	ESB-26S-18	06/02/93	18 to 19.5 feet	0.14 U				
ESB-27S	ESB-27S-05	06/02/93	5 to 6.5 feet	0.34 U				
ESB-27S	ESB-27S-10	06/02/93	10 to 11.5 feet	0.11 U				
ESB-27S	ESB-27S-10D	06/02/93	10 to 11.5 feet	0.11 U				
ESB-27S	ESB-27S-18	06/02/93	18 to 19.5 feet	0.12 U				
GF-SB06	GF-SB06-2	07/21/04	4 to 8 feet	***0.28***				
GF-SB06	GF-SB06-3	07/21/04	8 to 12 feet	0.04 U				
PLHA-1	PLHA-1 6"	09/08/92	6.5 to 7.5 feet	***2.1***				
PLHA-1	PLHA-1 3'	09/08/92	9 to 10 feet	***0.4***				
PLHA-2	PLHA-2 28"	09/08/92	2 to 3 feet	0.1 U				
PLHA-2A	PLHA-2A 16"	09/08/92	2 to 3 feet	***10***				
PLHA-3	PLHA-3 7'	09/08/92	7 to 8 feet	0.1 U				
PLHA-3	PLHA-3 10'	09/08/92	10 to 11 feet	0.1 U				
PLHA-4	PLHA-4 8.5'-9.0'	09/09/92	6.5 to 7 feet	0.1				
PLHA-4-0-6	PLHA-4 3.0'-3.5'	09/08/92	6.5 to 7 feet	0.1 U				
PLHA-4-36-42	PLHA-4 6.5'-7.0'	09/08/92	6.5 to 7 feet	0.1 U				
PLHA-5	PLHA-5 0-6"	09/08/92	2 to 3 feet	0.1				
PLHA-6	PLHA-6 0-6"	09/08/92	2 to 3 feet	***38***				
PLHA-7	PLHA-7 3' East	09/08/92	4 to 5 feet	0.1 U				
PLHA-8-0-6	PLHA-8 0-6"	09/09/92	2 to 3 feet	***150***				
PLHA-8-36-42	PLHA-8a 3.0'-3.5'	09/09/92	2 to 3 feet	***10***				
PLHA-9-0-6	PLHA-9 0-6"	09/09/92	2 to 3 feet	***14,000***				
PLHA-9-24-36	PLHA-9 2'-3'	09/09/92	2 to 3 feet	***590***				

Table 7-4A - Soil Mercury Data for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
PR-MW01	PR-MW01-1-3	09/14/09	1 to 3 feet	***0.773***				
PR-MW01	PR-MW01-5-7	09/14/09	5 to 7 feet	***219***				0.001 U
PR-MW01	PR-MW01-9-10	09/14/09	9 to 10 feet	0.036				
PR-MW01	PR-MW01-13-14	09/14/09	13 to 14 feet	0.037				
PR-MW01	PR-MW01-17-18	09/14/09	17 to 18 feet	0.041				
PR-MW02	PR-MW02-1-2.5	09/22/09	1 to 2.5 feet	***0.818***				
PR-MW02	PR-MW02-3.5-5	09/22/09	3.5 to 5 feet	***0.561***				
PR-MW02	PR-MW02-9-10	09/22/09	9 to 10 feet	0.021				
PR-MW02	PR-MW02-13-14	09/22/09	13 to 14 feet	0.04				
PR-MW02	PR-MW02-17-18	09/22/09	17 to 18 feet	0.027				
PR-MW03	PR-MW03-1-2	03/25/10	1 to 2 feet	***134***				
PR-MW03	PR-MW03-3-4	03/25/10	3 to 4 feet	***234***				
PR-MW03	PR-MW03-7-8	03/25/10	7 to 8 feet	***49.3***				
PR-MW03	PR-MW03-9-10	03/25/10	9 to 10 feet	***0.577***				
PR-MW03	PR-MW03-13-14	03/25/10	13 to 14 feet	0.097				
PR-SB02	PR-SB02-4-5	09/14/09	4 to 5 feet	***0.123***				
PR-SB02	PR-SB02-6-7	09/14/09	6 to 7 feet	0.021				
PR-SB02	PR-SB02-9-10	09/14/09	9 to 10 feet	0.018				
PR-SB02	PR-SB02-13-14	09/14/09	13 to 14 feet	0.02				
PR-SB02	PR-SB02-17-18	09/14/09	17 to 18 feet	0.029				
PR-SB03	PR-SB03-1-3	09/14/09	1 to 3 feet	***0.694***				
PR-SB03	PR-SB03-5-7	09/14/09	5 to 7 feet	0.062				
PR-SB03	PR-SB03-9-10	09/14/09	9 to 10 feet	0.035				
PR-SB03	PR-SB03-13-14	09/14/09	13 to 14 feet	0.019				
PR-SB03	PR-SB03-17-18	09/14/09	17 to 18 feet	0.06				
PR-SB04	PR-SB04-1-3	09/14/09	1 to 3 feet	***10.4***				
PR-SB04	PR-SB04-5-7	09/14/09	5 to 7 feet	***59.3***				0.001 U
PR-SB04	PR-SB04-10-12	09/14/09	10 to 12 feet	***1.29***				
PR-SB05	PR-SB05-5-7	09/14/09	5 to 7 feet	0.007 J				
PR-SB05	PR-SB05-9-10	09/14/09	9 to 10 feet	0.026				
PR-SB05	PR-SB05-13-14	09/14/09	13 to 14 feet	0.02				
PR-SB05	PR-SB05-17-18	09/14/09	17 to 18 feet	0.027				
PR-SB06	PR-SB06-0.5-2.5	09/22/09	0.5 to 2.5 feet	***0.374***				
PR-SB06	PR-SB06-3.5-5	09/22/09	3.5 to 5 feet	0.095				
PR-SB06	PR-SB06-5-6.5	09/22/09	5 to 6.5 feet	***0.877***				
PR-SB06	PR-SB06-9-10	09/22/09	9 to 10 feet	0.056				
PR-SB06	PR-SB06-13-14	09/22/09	13 to 14 feet	0.021				
PR-SB06	PR-SB06-17-18	09/22/09	17 to 18 feet	0.034				

Table 7-4A - Soil Mercury Data for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

					Mercury Speciation			
				Mercury in mg/kg	Methyl-mercury in mg/kg	Elemental Mercury in mg/kg	Total Mercury in mg/kg	TCLP Mercury in mg/L
			Unrestricted Soil Screening Level	***0.1 mg/kg***	***8 mg/kg***	***0.1 mg/kg***	***0.1 mg/kg***	**0.2**
			Industrial Soil Screening Level	0.1 mg/kg	350 mg/kg	0.1 mg/kg	0.1 mg/kg	
Location Name	**Sample Name**	**Sample Date**	**Depth Interval**					
WLSS-1	WLSS-1	09/16/92	1.3 to 1.8 feet	***0.4***				
WLSS-10	WLSS-10	09/16/92	5 to 5.5 feet	***0.9***				
WLSS-11	WLSS-11	09/16/92	5 to 5.5 feet	***11***				
WLSS-12	WLSS-12	09/16/92	1.3 to 1.8 feet	***19***				
WLSS-13	WLSS-13	09/16/92	5 to 5.5 feet	0.1				
WLSS-14	WLSS-14	09/16/92	1.3 to 1.8 feet	***3.8***				
WLSS-15	WLSS-15	09/16/92	1.3 to 1.8 feet	***360***				
WLSS-16	WLSS-16	09/16/92	5 to 5.5 feet	***1100***				
WLSS-17	WLSS-17	09/16/92	1.3 to 1.8 feet	***31***				
WLSS-2	WLSS-2	09/16/92	1.3 to 1.8 feet	***41***				
WLSS-3	WLSS-3	09/16/92	1.3 to 1.8 feet	***10***				
WLSS-4	WLSS-4	09/16/92	1.3 to 1.8 feet	***41***				
WLSS-5	WLSS-5	09/16/92	1.3 to 1.8 feet	***47***				
WLSS-6	WLSS-6	09/16/92	1.3 to 1.8 feet	***22***				
WLSS-7	WLSS-7	09/16/92	1.3 to 1.8 feet	***24***				
WLSS-8	WLSS-8	09/16/92	1.3 to 1.8 feet	0.1 U				
WLSS-9	WLSS-9	09/16/92	1.3 to 1.8 feet	0.1 U				

Table 7-4B - Groundwater Metals and Conventionals Data for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-13S 07/09/93 Pre-RI	EMW-13S 12/10/93 Pre-RI	EMW-13S 02/18/94 Pre-RI	EMW-13S 07/26/04 Pre-RI	EMW-13S 09/30/09 RI	EMW-13S 03/30/10 RI	PR-MW01 09/30/09 RI	PR-MW01 09/30/09 Field Dup RI
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5				0.8				
Dissolved Cadmium in ug/L	8.8	8.8				0.5 U				
Dissolved Chromium (III) in ug/L						8.00				
Dissolved Chromium (Total) in ug/L	260	260				8				
Dissolved Chromium (VI) in ug/L	50	50				11 U				
Dissolved Copper in ug/L	3.1	3.1				4				
Dissolved Lead in ug/L	8.1	8.1				2 U				
Dissolved Mercury in ug/L	0.059	0.059	180	37	0.021	0.1 U	0.00662	0.0121	0.0343	0.0432
Dissolved Nickel in ug/L	8.2	8.2				2				
Dissolved Zinc in ug/L	81	81				10 U				
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/l as CaCO3				2,110	494					
Chloride in mg/L				400						
Dissolved Calcium in mg/L				23						
Dissolved Iron in mg/L						0.05 U				
Dissolved Magnesium in mg/L				1.9						
Dissolved Manganese in mg/L	0.1	0.1		0.1		0.202				
Dissolved Potassium in mg/L				72						
Dissolved Sodium in mg/L				1,900						
Formaldehyde in ug/L	1,600	1,600				6 U				
Nitrate + Nitrite in mg/L						0.100 U				
Nitrate as Nitrogen in mg/L						0.100 U				
Nitrite as Nitrogen in mg/L						0.100 U				
Sulfate in mg/L				577		41.3				
Sulfide in mg/L				28.4						
Total Organic Carbon in ug/L				29,900						
Total Suspended Solids in mg/L						3.6				
Field Parameters										
Conductivity in us/cm			4,610	6,040	4,730	1,085	1,242	1,260	901	
Dissolved Oxygen in mg/L			0.61	1.35	1	1.06	0.64	0.54	0.68	
Eh (ORP) in mVolts			-0240	594	-0260	-0254.0	-332.6	-241.3	-342.5	
pH in pH units	6.2 - 8.5	6.2 - 8.5	9.86	13.94	9.89	7.39	7.64	7.7	9	
Practical Salinity (Calculated) in PSU			2.4	3.2	2.5	0.5	0.6	0.6	0.4	
Salinity in g/L			2.1	2.9						
Temperature in deg C			16.3	14.3	11.7	19.70	17.59	11.7	18.18	
Turbidity in NTU						4.34	10	10	20	

Table 7-4B - Groundwater Metals and Conventionals Data for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	PR-MW01 03/30/10 RI	PR-MW01 03/30/10 Field Dup RI	PR-MW02 09/30/09 RI	PR-MW02 03/31/10 RI	PR-MW03 04/01/10 RI
Dissolved Metals							
Dissolved Arsenic in ug/L	5	5					
Dissolved Cadmium in ug/L	8.8	8.8					
Dissolved Chromium (III) in ug/L							
Dissolved Chromium (Total) in ug/L	260	260					
Dissolved Chromium (VI) in ug/L	50	50					
Dissolved Copper in ug/L	3.1	3.1					
Dissolved Lead in ug/L	8.1	8.1					
Dissolved Mercury in ug/L	0.059	0.059	0.0143	0.0118	0.00136 J	0.00213	0.212
Dissolved Nickel in ug/L	8.2	8.2					
Dissolved Zinc in ug/L	81	81					
Conventional Chemistry Parameters (including other metals)							
Alkalinity (Total) in mg/l as CaCO3							
Chloride in mg/L							
Dissolved Calcium in mg/L							
Dissolved Iron in mg/L							
Dissolved Magnesium in mg/L							
Dissolved Manganese in mg/L	0.1	0.1					
Dissolved Potassium in mg/L							
Dissolved Sodium in mg/L							
Formaldehyde in ug/L	1,600	1,600					
Nitrate + Nitrite in mg/L							
Nitrate as Nitrogen in mg/L							
Nitrite as Nitrogen in mg/L							
Sulfate in mg/L							
Sulfide in mg/L							
Total Organic Carbon in ug/L							
Total Suspended Solids in mg/L							
Field Parameters							
Conductivity in us/cm			683		1,992	1,704	657
Dissolved Oxygen in mg/L			0.48		0.75	0.18	0.75
Eh (ORP) in mVolts			-234.6		-404.4	-306.7	-269.5
pH in pH units	6.2 - 8.5	6.2 - 8.5	8.36		10.6	10.53	7.94
Practical Salinity (Calculated) in PSU			0.3		1.0	0.8	0.3
Salinity in g/L							
Temperature in deg C			11.83		16.03	11.2	11.33
Turbidity in NTU			25		20	20	10

Table 7-4C - Groundwater Chemistry Data (non-Metals) for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-13S 07/26/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)			
Gasoline Range Hydrocarbons in ug/L			250 U
Diesel Range Hydrocarbons in ug/L			250 U
Oil Range Hydrocarbons in ug/L			500 U
Total TPHs in ug/L			ND
Polycyclic Aromatic Hydrocarbons (PAHs)			
Acenaphthene in ug/L	3.3	3.3	14
Acenaphthylene in ug/L			0.10 U
Anthracene in ug/L	9.6	9.6	0.10 U
Benzo(g,h,i)perylene in ug/L			0.10 U
Fluoranthene in ug/L	3.3	3.3	0.10 U
Fluorene in ug/L	3	3	6.6
Phenanthrene in ug/L			0.89
Pyrene in ug/L	15	15	0.10 U
1-Methylnaphthalene in ug/L			8.7
2-Methylnaphthalene in ug/L			3.4
Naphthalene in ug/L	83	83	12
Total Naphthalenes in ug/L			24.1
Benz(a)anthracene in ug/L	0.02	0.02	0.10 U
Benzo(a)pyrene in ug/L	0.02	0.02	0.10 U
Benzo(b)fluoranthene in ug/L	0.02	0.02	0.10 U
Benzo(k)fluoranthene in ug/L	0.02	0.02	0.10 U
Chrysene in ug/L	0.02	0.02	0.10 U
Dibenzo(a,h)anthracene in ug/L	0.02	0.02	0.10 U
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02	0.10 U
Total cPAHs TEQ in ug/L	0.02	0.02	ND
Other Semivolatiles			
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	1.0 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	1.0 U
1,3-Dichlorobenzene in ug/L	960	960	1.0 U
1,4-Dichlorobenzene in ug/L	5	5	1.0 U
2,4,5-Trichlorophenol in ug/L	3,600	3,600	5.0 U
2,4,6-Trichlorophenol in ug/L	2.4	2.4	5.0 U
2,4-Dichlorophenol in ug/L	73	73	3.0 U
2,4-Dimethylphenol in ug/L	200	200	3.0 U
2,4-Dinitrophenol in ug/L	1,400	1,400	25 U
2-Chloronaphthalene in ug/L	390	390	1.0 U
2-Chlorophenol in ug/L	37	37	1.0 U
2-Methylphenol in ug/L			1.0 U
2-Nitroaniline in ug/L			5.0 U
2-Nitrophenol in ug/L			5.0 U
3,3'-Dichlorobenzidine in ug/L	2	2	5.0 U
3-Nitroaniline in ug/L			6.0 U
4,6-Dinitro-2-methylphenol in ug/L			15 U
4-Bromophenyl phenyl ether in ug/L			1.0 U
4-Chloro-3-methylphenol in ug/L			2.0 U
4-Chloroaniline in ug/L			3.0 U
4-Chlorophenyl phenyl ether in ug/L			1.0 U
4-Methylphenol in ug/L			1.0 U
4-Nitroaniline in ug/L			5.0 U
4-Nitrophenol in ug/L			5.0 U
Benzoic acid in ug/L			10 U
Benzyl alcohol in ug/L			5.0 U

Table 7-4C - Groundwater Chemistry Data (non-Metals) for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-13S 07/26/04 Pre-RI
Benzyl butyl phthalate in ug/L	0.35	0.35	1.0 U
Bis(2-chloro-1-methylethyl) ether in ug/L	14	14	1.0 U
Bis(2-chloroethoxy)methane in ug/L			1.0 U
Bis(2-chloroethyl) ether in ug/L	0.53	0.53	2.0 U
Bis(2-ethylhexyl) phthalate in ug/L	1	1	1.0 U
Carbazole in ug/L			1.6
Dibenzofuran in ug/L			1.8
Diethyl phthalate in ug/L	740	740	1.0 U
Dimethyl phthalate in ug/L	1,100,000	1,100,000	1.0 U
Di-n-butyl phthalate in ug/L	140	140	1.0 U
Di-n-octyl phthalate in ug/L	0.2	0.2	1.0 U
Hexachlorobenzene in ug/L	0.2	0.2	1.0 U
Hexachlorobutadiene in ug/L	0.2	0.2	2.0 U
Hexachlorocyclopentadiene in ug/L	1,100	1,100	5.0 U
Hexachloroethane in ug/L	3.3	3.3	2.0 U
Isophorone in ug/L	600	600	1.0 U
Nitrobenzene in ug/L	690	690	1.0 U
N-Nitroso-di-n-propylamine in ug/L	0.32	0.32	2.0 U
N-Nitrosodiphenylamine in ug/L	3.7	3.7	1.0 U
Pentachlorophenol in ug/L	3	3	5.0 U
Phenol in ug/L	216,000	216,000	2.0 U
2,4-Dinitrotoluene in ug/L	3.4	3.4	5.0 U
2,6-Dinitrotoluene in ug/L			5.0 U
Total Naphthalenes in ug/L			24.1
Volatile Organic Compounds (VOC)			
1,1,1,2-Tetrachloroethane in ug/L	7.4	74	1.0 U
1,1,1-Trichloroethane in ug/L	11,000	25,000	1.0 U
1,1,2 - Trichlorotrifluoroethane in ug/L	1,100	2,400	2.0 U
1,1,2,2-Tetrachloroethane in ug/L	4	4	1.0 U
1,1,2-Trichloroethane in ug/L	7.9	16	1.0 U
1,1-Dichloroethane in ug/L	2,300	5,000	1.0 U
1,1-Dichloroethene in ug/L	3.2	3.2	1.0 U
1,1-Dichloropropene in ug/L			1.0 U
1,2,3-Trichlorobenzene in ug/L			5.0 U
1,2,3-Trichloropropane in ug/L			3.0 U
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	5.0 U
1,2,4-Trimethylbenzene in ug/L	24	52	1.0 U
1,2-Dibromo-3-chloropropane in ug/L			5.0 U
1,2-Dibromoethane (EDB) in ug/L	2	7.4	1.0 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	1.0 U
1,2-Dichloroethane (EDC) in ug/L	4.2	37	1.0 U
1,2-Dichloropropane in ug/L	15	15	1.0 U
1,3,5-Trimethylbenzene in ug/L	25	54	1.0 U
1,3-Dichlorobenzene in ug/L	960	960	1.0 U
1,3-Dichloropropane in ug/L			1.0 U
1,4-Dichloro-2-Butene in ug/L			5.0 U
1,4-Dichlorobenzene in ug/L	5	5	1.0 U
2,2-Dichloropropane in ug/L			1.0 U
2-Butanone in ug/L	350,000	760,000	5.0 U
2-Chloroethyl Vinyl Ether in ug/L			5.0 U
2-Chlorotoluene in ug/L			1.0 U
2-Hexanone in ug/L			5.0 U
4-Chlorotoluene in ug/L			1.0 U

Table 7-4C - Groundwater Chemistry Data (non-Metals) for Laurel Street Pipe Rack Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-13S 07/26/04 Pre-RI	
4-Methyl-2-pentanone in ug/L	11,000	24,000	5.0	U
Acetone in ug/L			5.0	U
Acrolein in ug/L	20	20	50	U
Acrylonitrile in ug/L	5	5	1.0	U
Benzene in ug/L	2.4	24	1.0	U
Bromobenzene in ug/L			1.0	U
Bromochloromethane in ug/L			1.0	U
Bromodichloromethane in ug/L	0.5	0.9	1.0	U
Bromoethane in ug/L			2.0	U
Bromoform in ug/L	140	140	1.0	U
Bromomethane in ug/L	13	28	1.0	U
Carbon disulfide in ug/L	400	870	1.0	U
Carbon tetrachloride in ug/L	0.5	1.6	1.0	U
Chlorobenzene in ug/L	100	220	1.0	U
Chloroethane in ug/L	12	120	1.0	U
Chloroform in ug/L	1.2	12	1.0	U
Chloromethane in ug/L	5.2	52	1.0	U
cis-1,2-Dichloroethene (DCE) in ug/L	160	350	1.0	U
cis-1,3-Dichloropropene in ug/L			1.0	U
Dibromochloromethane in ug/L	0.5	2.2	1.0	U
Dibromomethane in ug/L			1.0	U
Ethylbenzene in ug/L	2,100	2,100	1.0	U
Hexachlorobutadiene in ug/L	0.2	0.2	5.0	U
Isopropylbenzene in ug/L	720	1,600	1.0	U
Methylene chloride in ug/L	94	590	2.0	U
Methyliodide in ug/L			1.0	U
n-Butylbenzene in ug/L			1.0	U
n-Propylbenzene in ug/L			1.0	U
p-Isopropyltoluene in ug/L			1.0	U
sec-Butylbenzene in ug/L			1.0	U
Styrene in ug/L	78	780	1.0	U
tert-Butylbenzene in ug/L			1.0	U
Tetrachloroethene (PCE) in ug/L	3.3	3.3	1.0	U
Toluene in ug/L	7,300	7,300	1.0	U
trans-1,2-Dichloroethene in ug/L	130	290	1.0	U
trans-1,3-Dichloropropene in ug/L			1.0	U
Trichloroethene (TCE) in ug/L	1.6	8.4	1.0	U
Trichlorofluoromethane in ug/L	120	260	1.0	U
Vinyl acetate in ug/L	7,800	17,000	5.0	U
Vinyl chloride in ug/L	0.5	2.4	1.0	U
o-Xylene in ug/L	440	960	1.0	U
Xylenes (total) in ug/L			1.00	U
Naphthalene in ug/L	83	83	12	
Polychlorinated Biphenyls (PCBs)				
Aroclor 1016 in ug/L			0.10	U
Aroclor 1221 in ug/L			0.10	U
Aroclor 1232 in ug/L			0.10	U
Aroclor 1242 in ug/L			0.10	U
Aroclor 1248 in ug/L			0.10	U
Aroclor 1254 in ug/L			0.10	U
Aroclor 1260 in ug/L			0.10	U
Total PCBs in ug/L	0.1	0.1	0.35	U

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AS-06 (0-2.5 ft) 5/28/03 Pre-RI	AS-06 (2.5-5 ft) 5/28/03 Pre-RI	AS-06 (5-7.5 ft) 5/28/03 Pre-RI	AS-06 (7.5-10 ft) 5/28/03 Pre-RI	AS-08 (0-2.5 ft) 5/28/03 Pre-RI	AS-08 (2.5-5 ft) 5/28/03 Pre-RI	AS-08 (5-7.5 ft) 5/28/03 Pre-RI	AS-08 (7.5-10 ft) 5/28/03 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg							410	220	84	1,400
Oil Range Hydrocarbons in mg/kg							2,400	630	200	890
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000					2,810	850	284	2,290
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1	0.017	0.045	0.05	0.488	4.217	0.199	0.809	0.351
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AS-06 (0-2.5 ft) 5/28/03 Pre-RI	AS-06 (2.5-5 ft) 5/28/03 Pre-RI	AS-06 (5-7.5 ft) 5/28/03 Pre-RI	AS-06 (7.5-10 ft) 5/28/03 Pre-RI	AS-08 (0-2.5 ft) 5/28/03 Pre-RI	AS-08 (2.5-5 ft) 5/28/03 Pre-RI	AS-08 (5-7.5 ft) 5/28/03 Pre-RI	AS-08 (7.5-10 ft) 5/28/03 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26								
Acenaphthylene in mg/kg										
Anthracene in mg/kg	3.5	3.5								
Benzo(g,h,i)perylene in mg/kg										
Dibenzofuran in mg/kg	80	3,500								
Fluoranthene in mg/kg	2.6	2.6								
Fluorene in mg/kg	0.37	0.37								
Phenanthrene in mg/kg										
Pyrene in mg/kg	16	16								
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000								
Naphthalene in mg/kg	1.6	1.6								
Total Naphthalenes in mg/kg										
Benz(a)anthracene in mg/kg	0.12	0.12								
Benzo(a)pyrene in mg/kg	0.14	0.31								
Benzo(b)fluoranthene in mg/kg	0.38	0.38								
Benzo(k)fluoranthene in mg/kg	0.38	0.38								
Chrysene in mg/kg	0.13	0.13								
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58								
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1								
Total cPAHs TEQ in mg/kg	0.14	0.31								
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AS-12 (1-5 ft) 5/28/03 Pre-RI	AS-13 (1-5 ft) 5/28/03 Pre-RI	AS-14 (1-5 ft) 5/28/03 Pre-RI	AS-15 (1-5 ft) 5/28/03 Pre-RI	BK-04 (0-0.5 ft) 7/6/92 Pre-RI	CD-SB02 (0-4 ft) 7/19/04 Pre-RI	CD-SB02 (8-12 ft) 7/19/04 Pre-RI	CD-SB02 (12-16 ft) 7/19/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg								250 J	170 J	13 U
Oil Range Hydrocarbons in mg/kg								3,600 J	1,200 J	42
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000						3,850 J	1,370 J	55
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7						5 U	6 U	6 U
Cadmium in mg/kg	1	1						0.3	0.3	0.2 U
Chromium (Total) in mg/kg	260	260						22.2 J	19.2 J	23.3 J
Copper in mg/kg	36	36						32.2 J	35.6 J	30.2 J
Lead in mg/kg	81	81						5	7	6
Mercury in mg/kg	0.1	0.1	10.2	10.2	10.2	10.2	0.6	3.12	0.25	0.17
Nickel in mg/kg	48	48						23	24	24
Zinc in mg/kg	85	85						56.6	60.1	61.1
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg									0.04 U	0.04 U
Aroclor 1221 in mg/kg									0.04 U	0.04 U
Aroclor 1232 in mg/kg									0.04 U	0.04 U
Aroclor 1242 in mg/kg									0.04 U	0.04 U
Aroclor 1248 in mg/kg									0.04 U	0.04 U
Aroclor 1254 in mg/kg									0.04 U	0.04 U
Aroclor 1260 in mg/kg									0.04 U	0.04 U
Total PCBs in mg/kg	1	10							0.14 U	0.14 U

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AS-12 (1-5 ft) 5/28/03 Pre-RI	AS-13 (1-5 ft) 5/28/03 Pre-RI	AS-14 (1-5 ft) 5/28/03 Pre-RI	AS-15 (1-5 ft) 5/28/03 Pre-RI	BK-04 (0-0.5 ft) 7/6/92 Pre-RI	CD-SB02 (0-4 ft) 7/19/04 Pre-RI	CD-SB02 (8-12 ft) 7/19/04 Pre-RI	CD-SB02 (12-16 ft) 7/19/04 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26							0.052	0.024 U
Acenaphthylene in mg/kg									0.051 U	0.024 U
Anthracene in mg/kg	3.5	3.5							0.051 U	0.024 U
Benzo(g,h,i)perylene in mg/kg									0.051 U	0.024 U
Dibenzofuran in mg/kg	80	3,500								
Fluoranthene in mg/kg	2.6	2.6							0.072	0.037
Fluorene in mg/kg	0.37	0.37							0.069	0.024 U
Phenanthrene in mg/kg									0.16	0.03
Pyrene in mg/kg	16	16							0.052	0.028
1-Methylnaphthalene in mg/kg	35	4,500							0.065	0.024 U
2-Methylnaphthalene in mg/kg	320	14,000							0.1	0.024 U
Naphthalene in mg/kg	1.6	1.6							0.051 U	0.024 U
Total Naphthalenes in mg/kg									0.19	ND
Benz(a)anthracene in mg/kg	0.12	0.12							0.051 U	0.024 U
Benzo(a)pyrene in mg/kg	0.14	0.31							0.051 U	0.024 U
Benzo(b)fluoranthene in mg/kg	0.38	0.38							0.051 U	0.024 U
Benzo(k)fluoranthene in mg/kg	0.38	0.38							0.051 U	0.024 U
Chrysene in mg/kg	0.13	0.13							0.11	0.024 U
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58							0.051 U	0.024 U
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1							0.051 U	0.024 U
Total cPAHs TEQ in mg/kg	0.14	0.31							0.0394	ND
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11						8.16	7.37	7.44
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-6S (5-6.5 ft) 5/25/93 Pre-RI	EMW-6S (10-11.5 ft) 5/25/93 Pre-RI	EMW-6S (13-14.5 ft) 5/25/93 Pre-RI	EMW-6S (19-20.5 ft) 5/25/93 Pre-RI	EMW-7S (5-6.5 ft) 5/26/93 Pre-RI	EMW-7S (10-11.5 ft) 5/26/93 Pre-RI	EMW-7S (18-19.5 ft) 5/26/93 Pre-RI	EMW-8S FD (5-6.5 ft) 5/27/93 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg										
Oil Range Hydrocarbons in mg/kg										
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000								
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1	0.13	1.5	0.94	0.13 U	0.11 U	0.68	2.9	0.56
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-6S (5-6.5 ft) 5/25/93 Pre-RI	EMW-6S (10-11.5 ft) 5/25/93 Pre-RI	EMW-6S (13-14.5 ft) 5/25/93 Pre-RI	EMW-6S (19-20.5 ft) 5/25/93 Pre-RI	EMW-7S (5-6.5 ft) 5/26/93 Pre-RI	EMW-7S (10-11.5 ft) 5/26/93 Pre-RI	EMW-7S (18-19.5 ft) 5/26/93 Pre-RI	EMW-8S FD (5-6.5 ft) 5/27/93 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26								
Acenaphthylene in mg/kg										
Anthracene in mg/kg	3.5	3.5								
Benzo(g,h,i)perylene in mg/kg										
Dibenzofuran in mg/kg	80	3,500								
Fluoranthene in mg/kg	2.6	2.6								
Fluorene in mg/kg	0.37	0.37								
Phenanthrene in mg/kg										
Pyrene in mg/kg	16	16								
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000								
Naphthalene in mg/kg	1.6	1.6								
Total Naphthalenes in mg/kg										
Benz(a)anthracene in mg/kg	0.12	0.12								
Benzo(a)pyrene in mg/kg	0.14	0.31								
Benzo(b)fluoranthene in mg/kg	0.38	0.38								
Benzo(k)fluoranthene in mg/kg	0.38	0.38								
Chrysene in mg/kg	0.13	0.13								
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58								
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1								
Total cPAHs TEQ in mg/kg	0.14	0.31								
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg								4,360		
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg								54.8		
Total Organic Carbon in percent								2.2		

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-8S (5-6.5 ft) 5/27/93 Pre-RI	EMW-8S (18-19.5 ft) 5/27/93 Pre-RI	EMW-12S FD (5-6.5 ft) 5/25/93 Pre-RI	EMW-12S (5-6.5 ft) 5/25/93 Pre-RI	EMW-12S (10-11.5 ft) 5/25/93 Pre-RI	EMW-12S (14-15.5 ft) 5/25/93 Pre-RI	EMW-20S (5-6.5 ft) 11/20/93 Pre-RI	EMW-20S (11-12.5 ft) 11/20/93 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg										
Oil Range Hydrocarbons in mg/kg										
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000								
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1	0.50	1.4	0.12 U	0.11 U	0.11 U	0.13 U	20	7.0
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-8S (5-6.5 ft) 5/27/93 Pre-RI	EMW-8S (18-19.5 ft) 5/27/93 Pre-RI	EMW-12S FD (5-6.5 ft) 5/25/93 Pre-RI	EMW-12S (5-6.5 ft) 5/25/93 Pre-RI	EMW-12S (10-11.5 ft) 5/25/93 Pre-RI	EMW-12S (14-15.5 ft) 5/25/93 Pre-RI	EMW-20S (5-6.5 ft) 11/20/93 Pre-RI	EMW-20S (11-12.5 ft) 11/20/93 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26								
Acenaphthylene in mg/kg										
Anthracene in mg/kg	3.5	3.5								
Benzo(g,h,i)perylene in mg/kg										
Dibenzofuran in mg/kg	80	3,500								
Fluoranthene in mg/kg	2.6	2.6								
Fluorene in mg/kg	0.37	0.37								
Phenanthrene in mg/kg										
Pyrene in mg/kg	16	16								
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000								
Naphthalene in mg/kg	1.6	1.6								
Total Naphthalenes in mg/kg										
Benz(a)anthracene in mg/kg	0.12	0.12								
Benzo(a)pyrene in mg/kg	0.14	0.31								
Benzo(b)fluoranthene in mg/kg	0.38	0.38								
Benzo(k)fluoranthene in mg/kg	0.38	0.38								
Chrysene in mg/kg	0.13	0.13								
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58								
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1								
Total cPAHs TEQ in mg/kg	0.14	0.31								
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-20S (15-16.5 ft) 11/20/93 Pre-RI	ESB-20S (2-3.5 ft) 5/28/93 Pre-RI	ESB-20S (5-6.5 ft) 5/28/93 Pre-RI	ESB-20S (14-15.5 ft) 5/28/93 Pre-RI	ESB-20S (20-21.5 ft) 5/28/93 Pre-RI	ESB-21S (9-10.5 ft) 5/27/93 Pre-RI	ESB-21S (25-26.5 ft) 5/28/93 Pre-RI	ESB-31S (5-6.5 ft) 5/28/93 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg										
Oil Range Hydrocarbons in mg/kg										
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000								
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1	13	2,500	5,800	260	31	0.23	1.3	2,600
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-20S (15-16.5 ft) 11/20/93 Pre-RI	ESB-20S (2-3.5 ft) 5/28/93 Pre-RI	ESB-20S (5-6.5 ft) 5/28/93 Pre-RI	ESB-20S (14-15.5 ft) 5/28/93 Pre-RI	ESB-20S (20-21.5 ft) 5/28/93 Pre-RI	ESB-21S (9-10.5 ft) 5/27/93 Pre-RI	ESB-21S (25-26.5 ft) 5/28/93 Pre-RI	ESB-31S (5-6.5 ft) 5/28/93 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26								
Acenaphthylene in mg/kg										
Anthracene in mg/kg	3.5	3.5								
Benzo(g,h,i)perylene in mg/kg										
Dibenzofuran in mg/kg	80	3,500								
Fluoranthene in mg/kg	2.6	2.6								
Fluorene in mg/kg	0.37	0.37								
Phenanthrene in mg/kg										
Pyrene in mg/kg	16	16								
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000								
Naphthalene in mg/kg	1.6	1.6								
Total Naphthalenes in mg/kg										
Benz(a)anthracene in mg/kg	0.12	0.12								
Benzo(a)pyrene in mg/kg	0.14	0.31								
Benzo(b)fluoranthene in mg/kg	0.38	0.38								
Benzo(k)fluoranthene in mg/kg	0.38	0.38								
Chrysene in mg/kg	0.13	0.13								
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58								
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1								
Total cPAHs TEQ in mg/kg	0.14	0.31								
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	ESB-31S (10-11.5 ft) 5/28/93 Pre-RI	ESB-31S (18-19.5 ft) 5/28/93 Pre-RI	MG-MW01 (2.5-4 ft) 7/19/04 Pre-RI	MG-MW01 (7.5-9 ft) 7/19/04 Pre-RI	MG-MW02 (1-1.5 ft) 3/25/10 RI	MG-MW02 (1.5-2 ft) 3/25/10 RI	MG-MW02 (2-3 ft) 3/25/10 RI	MG-MW02 FD (5-6 ft) 3/25/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100			5.2 U	6.5 U				
Diesel Range Hydrocarbons in mg/kg					160					
Oil Range Hydrocarbons in mg/kg					1,100					
Bunker C in mg/kg	4,000	10,000				2,700				
Total TPHs in mg/kg	4,000	10,000			1,260	2,700				
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7			10 U	7 U				
Cadmium in mg/kg	1	1			0.5 U	0.5				
Chromium (Total) in mg/kg	260	260			41.0	44.2				
Copper in mg/kg	36	36			29.3	25.3				
Lead in mg/kg	81	81			10	19				
Mercury in mg/kg	0.1	0.1	20	2.1	0.12	0.22	0.235	0.515	0.054	0.514
Nickel in mg/kg	48	48			19	21				
Zinc in mg/kg	85	85			50	55.0				
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	ESB-31S (10-11.5 ft) 5/28/93 Pre-RI	ESB-31S (18-19.5 ft) 5/28/93 Pre-RI	MG-MW01 (2.5-4 ft) 7/19/04 Pre-RI	MG-MW01 (7.5-9 ft) 7/19/04 Pre-RI	MG-MW02 (1-1.5 ft) 3/25/10 RI	MG-MW02 (1.5-2 ft) 3/25/10 RI	MG-MW02 (2-3 ft) 3/25/10 RI	MG-MW02 FD (5-6 ft) 3/25/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26								
Acenaphthylene in mg/kg										
Anthracene in mg/kg	3.5	3.5								
Benzo(g,h,i)perylene in mg/kg										
Dibenzofuran in mg/kg	80	3,500								
Fluoranthene in mg/kg	2.6	2.6								
Fluorene in mg/kg	0.37	0.37								
Phenanthrene in mg/kg										
Pyrene in mg/kg	16	16								
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000								
Naphthalene in mg/kg	1.6	1.6								
Total Naphthalenes in mg/kg										
Benz(a)anthracene in mg/kg	0.12	0.12								
Benzo(a)pyrene in mg/kg	0.14	0.31								
Benzo(b)fluoranthene in mg/kg	0.38	0.38								
Benzo(k)fluoranthene in mg/kg	0.38	0.38								
Chrysene in mg/kg	0.13	0.13								
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58								
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1								
Total cPAHs TEQ in mg/kg	0.14	0.31								
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11			7.79	7.71				
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-MW02 (5-6 ft) 3/25/10 RI	MG-MW02 (8-9 ft) 3/25/10 RI	MG-MW04 (2-3 ft) 12/17/10 RI	MG-MW04 (6-7 ft) 12/17/10 RI	MG-MW04 (7-8 ft) 12/17/10 RI	MG-MW04 (9-10 ft) 12/17/10 RI	MG-MW04 (11-12 ft) 12/17/10 RI	MG-MW05 FD (2-3 ft) 12/16/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg					44	22 UJ	650	230	270	71
Oil Range Hydrocarbons in mg/kg					480	69 UJ	1,100	360	900	290
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000			524 J	91.0 J	1,750 J	590 J	1,170 J	361 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1	0.482	0.058						
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-MW02 (5-6 ft) 3/25/10 RI	MG-MW02 (8-9 ft) 3/25/10 RI	MG-MW04 (2-3 ft) 12/17/10 RI	MG-MW04 (6-7 ft) 12/17/10 RI	MG-MW04 (7-8 ft) 12/17/10 RI	MG-MW04 (9-10 ft) 12/17/10 RI	MG-MW04 (11-12 ft) 12/17/10 RI	MG-MW05 FD (2-3 ft) 12/16/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26					0.14		0.52	0.61 J
Acenaphthylene in mg/kg							0.041		0.43	0.0085
Anthracene in mg/kg	3.5	3.5					0.063		2.3	0.13
Benzo(g,h,i)perylene in mg/kg							0.041		1.7	0.04
Dibenzofuran in mg/kg	80	3,500					0.11		0.87	0.4 J
Fluoranthene in mg/kg	2.6	2.6					0.47		9.4	0.57
Fluorene in mg/kg	0.37	0.37					0.1		1.1	0.67 J
Phenanthrene in mg/kg							0.41		5.5	1.2
Pyrene in mg/kg	16	16					0.27		6.9	0.41
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000					0.17		1.5	0.14
Naphthalene in mg/kg	1.6	1.6					1.1		1.8	0.15
Total Naphthalenes in mg/kg							1.27		3.3	0.29
Benz(a)anthracene in mg/kg	0.12	0.12					0.052		3.2	0.098
Benzo(a)pyrene in mg/kg	0.14	0.31					0.042		3.2	0.057
Benzo(b)fluoranthene in mg/kg	0.38	0.38					0.06		3.2	0.1
Benzo(k)fluoranthene in mg/kg	0.38	0.38					0.018		1.3	0.034
Chrysene in mg/kg	0.13	0.13					0.052		3.5	0.13
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58					0.0053		0.32	0.0084
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1					0.029		1.8	0.034
Total cPAHs TEQ in mg/kg	0.14	0.31					0.059		4.22	0.0857
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-MW05 (2-3 ft) 12/16/10 RI	MG-MW05 (5-6 ft) 12/16/10 RI	MG-MW05 (7-8 ft) 12/16/10 RI	MG-MW05 (9-10 ft) 12/16/10 RI	MG-MW05 (11-12 ft) 12/16/10 RI	MG-SB01 (0-2 ft) 7/21/04 Pre-RI	MG-SB01 (2-3 ft) 7/21/04 Pre-RI	MG-SB02 (0-4 ft) 7/22/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100							6.0 U	5.1 U
Diesel Range Hydrocarbons in mg/kg			66	36	270	16 UJ	100	120 J	66	250
Oil Range Hydrocarbons in mg/kg			300	110 UJ	900	41 UJ	200	320 J	130	2,400
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	366 J	146 J	1,170 J	57.0 J	300 J	440 J	196	2,650
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7						5 U	5 U	5 U
Cadmium in mg/kg	1	1						0.3	0.2 U	0.2
Chromium (Total) in mg/kg	260	260						36.0	34.4	35.0 J
Copper in mg/kg	36	36						137	58.6	34.8 J
Lead in mg/kg	81	81						52	34	58 J
Mercury in mg/kg	0.1	0.1						0.67 J	2.26 J	0.50
Nickel in mg/kg	48	48						24	26	35
Zinc in mg/kg	85	85						328 J	84.3 J	71.4 J
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-MW05 (2-3 ft) 12/16/10 RI	MG-MW05 (5-6 ft) 12/16/10 RI	MG-MW05 (7-8 ft) 12/16/10 RI	MG-MW05 (9-10 ft) 12/16/10 RI	MG-MW05 (11-12 ft) 12/16/10 RI	MG-SB01 (0-2 ft) 7/21/04 Pre-RI	MG-SB01 (2-3 ft) 7/21/04 Pre-RI	MG-SB02 (0-4 ft) 7/22/04 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.35 J			0.12				
Acenaphthylene in mg/kg			0.0066			0.004				
Anthracene in mg/kg	3.5	3.5	0.092			0.029				
Benzo(g,h,i)perylene in mg/kg			0.037			0.028				
Dibenzofuran in mg/kg	80	3,500	0.22 J			0.11				
Fluoranthene in mg/kg	2.6	2.6	0.47			0.14				
Fluorene in mg/kg	0.37	0.37	0.39 J			0.11				
Phenanthrene in mg/kg			0.84			0.24				
Pyrene in mg/kg	16	16	0.38			0.12				
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.092			0.24				
Naphthalene in mg/kg	1.6	1.6	0.12			0.6				
Total Naphthalenes in mg/kg			0.212			0.84				
Benz(a)anthracene in mg/kg	0.12	0.12	0.098			0.03				
Benzo(a)pyrene in mg/kg	0.14	0.31	0.057			0.021				
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.099			0.026				
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.03			0.012				
Chrysene in mg/kg	0.13	0.13	0.093			0.044				
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.0084			0.0035 UJ				
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.032			0.02				
Total cPAHs TEQ in mg/kg	0.14	0.31	0.0847			0.0306				
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11						7.89	7.60	8.29
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB02 (4-8 ft) 7/22/04 Pre-RI	MG-SB03 (0-4 ft) 7/22/04 Pre-RI	MG-SB03 (4-8 ft) 7/22/04 Pre-RI	MG-SB03 (8-12 ft) 7/22/04 Pre-RI	MG-SB04 (2-4 ft) 9/14/09 RI	MG-SB04 (6-8 ft) 9/14/09 RI	MG-SB04 (11-12 ft) 9/14/09 RI	MG-SB04 (16-18 ft) 9/14/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100	6.4 U	5.7 U	6.1 U	6.6 U				
Diesel Range Hydrocarbons in mg/kg			49	17	26	74	63	160	370	22 J
Oil Range Hydrocarbons in mg/kg			240	180	190	760	61 J	440	760	50 J
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	289	197	216	834	124 J	600	1,130	72 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7	6 U	6 U	6 U					
Cadmium in mg/kg	1	1	0.8	1.3	0.2 U					
Chromium (Total) in mg/kg	260	260	29.7 J	21.0 J	27.3 J					
Copper in mg/kg	36	36	35.3 J	10.9 J	12.2 J					
Lead in mg/kg	81	81	52 J	11 J	8 J					
Mercury in mg/kg	0.1	0.1	0.09	0.10	0.05 U					
Nickel in mg/kg	48	48	29	15	17					
Zinc in mg/kg	85	85	74.2 J	26.3 J	26.9 J					
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB02 (4-8 ft) 7/22/04 Pre-RI	MG-SB03 (0-4 ft) 7/22/04 Pre-RI	MG-SB03 (4-8 ft) 7/22/04 Pre-RI	MG-SB03 (8-12 ft) 7/22/04 Pre-RI	MG-SB04 (2-4 ft) 9/14/09 RI	MG-SB04 (6-8 ft) 9/14/09 RI	MG-SB04 (11-12 ft) 9/14/09 RI	MG-SB04 (16-18 ft) 9/14/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26					0.01	0.52	0.063	0.013
Acenaphthylene in mg/kg							0.001 J	0.0052	0.019	0.0041
Anthracene in mg/kg	3.5	3.5					0.0085	0.084	0.032	0.0069
Benzo(g,h,i)perylene in mg/kg							0.024	0.028	0.059	0.01
Dibenzofuran in mg/kg	80	3,500					0.0062	0.25	0.034	0.0073
Fluoranthene in mg/kg	2.6	2.6					0.1	0.34	0.21	0.028
Fluorene in mg/kg	0.37	0.37					0.0085	0.44	0.05	0.0078
Phenanthrene in mg/kg							0.056	0.65	0.18	0.033
Pyrene in mg/kg	16	16					0.088	0.34	0.24	0.03
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000					0.0067	0.18	0.044	0.0088
Naphthalene in mg/kg	1.6	1.6					0.0095 U	0.21	0.18	0.035
Total Naphthalenes in mg/kg							0.0115	0.39	0.224	0.0438
Benz(a)anthracene in mg/kg	0.12	0.12					0.039	0.16	0.052	0.0093
Benzo(a)pyrene in mg/kg	0.14	0.31					0.034	0.077	0.06	0.011
Benzo(b)fluoranthene in mg/kg	0.38	0.38					0.05	0.078	0.075	0.012
Benzo(k)fluoranthene in mg/kg	0.38	0.38					0.016	0.017	0.023	0.0042
Chrysene in mg/kg	0.13	0.13					0.041	0.18	0.057	0.011
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58					0.006	0.018	0.0068	0.0013 J
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1					0.025	0.016	0.047	0.0082
Total cPAHs TEQ in mg/kg	0.14	0.31					0.048	0.108	0.081	0.0146
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11	8.10	7.96	7.80	8.30				
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB05 (2-4 ft) 9/14/09 RI	MG-SB05 (7-8 ft) 9/14/09 RI	MG-SB05 (10-11 ft) 9/14/09 RI	MG-SB05 (14-15 ft) 9/14/09 RI	MG-SB06 (3-5 ft) 9/21/09 RI	MG-SB06 (7-8 ft) 9/21/09 RI	MG-SB06 (10-11 ft) 9/21/09 RI	MG-SB07 (1-2 ft) 9/14/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			81	5.5 J	16 J	43 J	230	200	30 U	520
Oil Range Hydrocarbons in mg/kg			290	12 J	18 J	110 J	150	250	49 J	490
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	371	17.5 J	34 J	153 J	380	450	64 J	1,010
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB05 (2-4 ft) 9/14/09 RI	MG-SB05 (7-8 ft) 9/14/09 RI	MG-SB05 (10-11 ft) 9/14/09 RI	MG-SB05 (14-15 ft) 9/14/09 RI	MG-SB06 (3-5 ft) 9/21/09 RI	MG-SB06 (7-8 ft) 9/21/09 RI	MG-SB06 (10-11 ft) 9/21/09 RI	MG-SB07 (1-2 ft) 9/14/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.036	0.0041	1.1	0.023	7.7	14	1.7	0.7
Acenaphthylene in mg/kg			0.0063	0.00039 J	0.0061	0.0015 J	0.02 U	0.034	0.0054 U	0.024
Anthracene in mg/kg	3.5	3.5	0.018	0.0013 J	0.072	0.0056 J	2.8	1.4	0.45	0.32
Benzo(g,h,i)perylene in mg/kg			0.15	0.00095 J	0.0095	0.0036 J	0.085	0.084	0.018	0.085
Dibenzofuran in mg/kg	80	3,500	0.025	0.0017 J	0.67	0.013	4.6	6.5	1.3	0.51
Fluoranthene in mg/kg	2.6	2.6	0.22	0.0078	0.46	0.053	6.9	4.9	1.2	1.2
Fluorene in mg/kg	0.37	0.37	0.039	0.0028	0.76	0.016	6.1	7.3	1.4	0.91
Phenanthrene in mg/kg			0.19	0.0099	1.3	0.036	14	15	4.1	2.8
Pyrene in mg/kg	16	16	0.35	0.0076	0.35	0.052	4.4 J	3.2 J	0.96 J	1
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.013	2.7 U	0.75	0.016	4.1	10	1.4	0.53
Naphthalene in mg/kg	1.6	1.6	0.018	0.014 U	2.6	0.062	17	50	6.5	0.41
Total Naphthalenes in mg/kg			0.031	ND	3.35	0.078	21.1	60.0	7.9	0.94
Benz(a)anthracene in mg/kg	0.12	0.12	0.36	0.002 J	0.056	0.0078 J	1	0.38	0.17	0.48
Benzo(a)pyrene in mg/kg	0.14	0.31	0.23	0.00099 J	0.015	0.0034 J	0.32	0.17	0.048	0.22
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.39	0.0017 J	0.029	0.0075 J	0.64	0.22	0.086	0.3
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.11	0.00042 J	0.0062	0.0018 J	0.2	0.067	0.027	0.063
Chrysene in mg/kg	0.13	0.13	0.37	0.002 J	0.032	0.0035 J	1.1	0.37	0.17	0.42
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.04	0.0027 U	0.0011 J	0.011 U	0.029	0.016	0.0033 J	0.037
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.14	2.7 U	0.0064	0.0026 J	0.089	0.077	0.014	0.075
Total cPAHs TEQ in mg/kg	0.14	0.31	0.338	0.00162	0.0252	0.00596	0.527	0.25	0.0797	0.32
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB07 (6-8 ft) 9/14/09 RI	MG-SB07 (12-13 ft) 9/14/09 RI	MG-SB07 (15-16 ft) 9/14/09 RI	MG-SB08 (1-2 ft) 9/14/09 RI	MG-SB08 (7-8 ft) 9/14/09 RI	MG-SB08 (11-12 ft) 9/14/09 RI	MG-SB08 (15-16 ft) 9/14/09 RI	MG-SB09 (2-4 ft) 9/14/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			4,200	88	1,100	290	200	49	89	200
Oil Range Hydrocarbons in mg/kg			5,100	110 J	970	980	600	130 J	220 J	110 J
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	9,300	198 J	2,070	1,270	800	179 J	309 J	310 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg			41 UJ							
Aliphatics C12-C16 (EPH) in mg/kg			220 J							
Aliphatics C16-C21 (EPH) in mg/kg			510 J							
Aliphatics C21-C34 (EPH) in mg/kg			2,900 J							
Aliphatics C8-C10 (EPH) in mg/kg			41 UJ							
Aromatics C10-C12 (EPH) in mg/kg			58 J							
Aromatics C12-C16 (EPH) in mg/kg			390 J							
Aromatics C16-C21 (EPH) in mg/kg			1,300 J							
Aromatics C21-C34 (EPH) in mg/kg			3,700 J							
Aromatics C8-C10 (EPH) in mg/kg			41 UJ							
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB07 (6-8 ft) 9/14/09 RI	MG-SB07 (12-13 ft) 9/14/09 RI	MG-SB07 (15-16 ft) 9/14/09 RI	MG-SB08 (1-2 ft) 9/14/09 RI	MG-SB08 (7-8 ft) 9/14/09 RI	MG-SB08 (11-12 ft) 9/14/09 RI	MG-SB08 (15-16 ft) 9/14/09 RI	MG-SB09 (2-4 ft) 9/14/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	2.4	0.06	0.011	0.1	0.0065	0.14	0.01	0.24
Acenaphthylene in mg/kg			0.38 U	0.0075	0.0097	0.024	0.01	0.046	0.017	0.028
Anthracene in mg/kg	3.5	3.5	1.5	0.042	0.012	0.13	0.011	0.078	0.02	0.34
Benzo(g,h,i)perylene in mg/kg			0.88	0.019	0.02	0.39	0.03	0.096	0.043	0.54
Dibenzofuran in mg/kg	80	3,500	0.93	0.046	0.012	0.045	0.016	0.047	0.015	0.12
Fluoranthene in mg/kg	2.6	2.6	2.3	0.1	0.074	0.76	0.058	0.44	0.13	2.1
Fluorene in mg/kg	0.37	0.37	3	0.088	0.014	0.11	0.013	0.088	0.017	0.27
Phenanthrene in mg/kg			14	0.32	0.082	0.58	0.056	0.38	0.11	1.6
Pyrene in mg/kg	16	16	9	0.23	0.078	0.72	0.077	0.45	0.13	1.7
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	24	0.31	0.045	0.073	0.035	0.099	0.026	0.048
Naphthalene in mg/kg	1.6	1.6	4.1	0.12	0.11	0.019	0.087	0.3	0.11	0.044
Total Naphthalenes in mg/kg			28.1	0.43	0.155	0.092	0.122	0.399	0.136	0.092
Benz(a)anthracene in mg/kg	0.12	0.12	3.9	0.094	0.015	0.43	0.025	0.12	0.031	0.74
Benzo(a)pyrene in mg/kg	0.14	0.31	2.8	0.057	0.022	0.48	0.031	0.13	0.04	0.79
Benzo(b)fluoranthene in mg/kg	0.38	0.38	1.4	0.037	0.019	0.56	0.042	0.15	0.045	1
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.27	0.0074	0.0055 J	0.19	0.01	0.041	0.013	0.31
Chrysene in mg/kg	0.13	0.13	8.6	0.14	0.022	0.43	0.031	0.12	0.035	0.6
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.8	0.012	0.0023 J	0.099	0.0062	0.013	0.0049 J	0.11
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.27	0.011	0.013	0.4	0.026	0.091	0.033	0.62
Total cPAHs TEQ in mg/kg	0.14	0.31	3.55	0.0745	0.0277	0.652	0.0422	0.173	0.053	1.07
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB09 (6-7 ft) 9/14/09 RI	MG-SB09 (11-12 ft) 9/14/09 RI	MG-SB09 (19-20 ft) 9/14/09 RI	MG-SB10 (1-2 ft) 9/14/09 RI	MG-SB10 (7-8 ft) 9/14/09 RI	MG-SB10 (11-12 ft) 9/14/09 RI	MG-SB10 (15-16 ft) 9/14/09 RI	MG-SB11 (2-3 ft) 12/20/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			9,200	310	27 J	200	18 J	66	100	220 UJ
Oil Range Hydrocarbons in mg/kg			1,200	1,000	75 J	990	57 J	130 J	220 J	2,300
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	10,400	1,310	102 J	1,190	75 J	196 J	320 J	2,520 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg			88 J							
Aliphatics C12-C16 (EPH) in mg/kg			860 J							
Aliphatics C16-C21 (EPH) in mg/kg			3,000 J							
Aliphatics C21-C34 (EPH) in mg/kg			1,200 J							
Aliphatics C8-C10 (EPH) in mg/kg			12 UJ							
Aromatics C10-C12 (EPH) in mg/kg			24 UJ							
Aromatics C12-C16 (EPH) in mg/kg			73 J							
Aromatics C16-C21 (EPH) in mg/kg			820 J							
Aromatics C21-C34 (EPH) in mg/kg			340 J							
Aromatics C8-C10 (EPH) in mg/kg			24 UJ							
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB09 (6-7 ft) 9/14/09 RI	MG-SB09 (11-12 ft) 9/14/09 RI	MG-SB09 (19-20 ft) 9/14/09 RI	MG-SB10 (1-2 ft) 9/14/09 RI	MG-SB10 (7-8 ft) 9/14/09 RI	MG-SB10 (11-12 ft) 9/14/09 RI	MG-SB10 (15-16 ft) 9/14/09 RI	MG-SB11 (2-3 ft) 12/20/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.32	0.022	0.004 J	0.077	0.0021 J	0.14	0.02	
Acenaphthylene in mg/kg			0.029 J	0.04	0.0059	0.18 J	0.0031 J	0.049	0.012	
Anthracene in mg/kg	3.5	3.5	0.12	0.027	0.0065	0.12 J	0.0036 J	0.073	0.02	
Benzo(g,h,i)perylene in mg/kg			0.68	0.034	0.013	0.77 J	0.0071	0.038	0.028	
Dibenzofuran in mg/kg	80	3,500	0.25	0.048	0.0062	0.083	0.016	0.11	0.014	
Fluoranthene in mg/kg	2.6	2.6	1.1	0.12	0.033	0.42	0.014	0.22	0.12	
Fluorene in mg/kg	0.37	0.37	0.31	0.028	0.0067	0.18	0.0033 J	0.091	0.015	
Phenanthrene in mg/kg			0.93	0.16	0.029	0.46	0.021	0.19	0.092	
Pyrene in mg/kg	16	16	0.65	0.13	0.032	0.67	0.013	0.19	0.12	
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.35	0.061	0.0089	0.061	0.013	0.15	0.024	
Naphthalene in mg/kg	1.6	1.6	0.86	0.28	0.034	0.086	0.042	0.65	0.15	
Total Naphthalenes in mg/kg			1.21	0.341	0.0429	0.147	0.055	0.8	0.174	
Benz(a)anthracene in mg/kg	0.12	0.12	0.66	0.036	0.012	0.42 J	0.0044	0.05	0.021	
Benzo(a)pyrene in mg/kg	0.14	0.31	0.83	0.036	0.017	1.9	0.0086	0.054	0.029	
Benzo(b)fluoranthene in mg/kg	0.38	0.38	1.1	0.051	0.016	1.7	0.0082	0.057	0.026	
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.36	0.012	0.0054	0.44 J	0.0025 J	0.017	0.0067 J	
Chrysene in mg/kg	0.13	0.13	0.58	0.036	0.013	0.29 J	0.0062	0.044	0.019	
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.22	0.0058	0.0024 J	0.23 J	0.0012 J	0.0054	0.002 J	
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.73	0.029	0.011	0.99	0.0061	0.035	0.021	
Total cPAHs TEQ in mg/kg	0.14	0.31	1.14	0.0497	0.0218	2.29	0.0109	0.0709	0.0369	
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB11 (5-6 ft) 12/20/10 RI	MG-SB11 (7-8 ft) 12/20/10 RI	MG-SB11 (9-10 ft) 12/20/10 RI	MG-SB11 FD (12-13 ft) 12/20/10 RI	MG-SB11 (12-13 ft) 12/20/10 RI	MG-SB12 (2-3 ft) 12/22/10 RI	MG-SB12 (6-7 ft) 12/22/10 RI	MG-SB12 (8-9 ft) 12/22/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			170 UJ	150	24 UJ	110	110	82	580	630
Oil Range Hydrocarbons in mg/kg			1,600	340	75 UJ	240	250	360	4,000	1,400
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	1,770 J	490 J	99.0 J	350 J	360 J	442 J	4,580 J	2,030 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg									10	
Aliphatics C12-C16 (EPH) in mg/kg									39	
Aliphatics C16-C21 (EPH) in mg/kg									140	
Aliphatics C21-C34 (EPH) in mg/kg									1,600	
Aliphatics C8-C10 (EPH) in mg/kg									15	
Aromatics C10-C12 (EPH) in mg/kg									2.7 U	
Aromatics C12-C16 (EPH) in mg/kg									9.4	
Aromatics C16-C21 (EPH) in mg/kg									94	
Aromatics C21-C34 (EPH) in mg/kg									360	
Aromatics C8-C10 (EPH) in mg/kg									2.7 U	
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB11 (5-6 ft) 12/20/10 RI	MG-SB11 (7-8 ft) 12/20/10 RI	MG-SB11 (9-10 ft) 12/20/10 RI	MG-SB11 FD (12-13 ft) 12/20/10 RI	MG-SB11 (12-13 ft) 12/20/10 RI	MG-SB12 (2-3 ft) 12/22/10 RI	MG-SB12 (6-7 ft) 12/22/10 RI	MG-SB12 (8-9 ft) 12/22/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		0.48	0.01				0.46	
Acenaphthylene in mg/kg				0.17	0.0074				0.017 J	
Anthracene in mg/kg	3.5	3.5		0.56	0.014				0.27	
Benzo(g,h,i)perylene in mg/kg				0.57	0.037				0.42	
Dibenzofuran in mg/kg	80	3,500		0.33	0.017				0.25	
Fluoranthene in mg/kg	2.6	2.6		2.6	0.11				1.6	
Fluorene in mg/kg	0.37	0.37		0.5	0.016				0.35	
Phenanthrene in mg/kg				2.4	0.082				1.4	
Pyrene in mg/kg	16	16		2.5	0.088				1.2	
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000		0.56	0.031				0.27	
Naphthalene in mg/kg	1.6	1.6		0.81	0.063				1.3	
Total Naphthalenes in mg/kg				1.37	0.094				1.57	
Benz(a)anthracene in mg/kg	0.12	0.12		0.98	0.034				0.58	
Benzo(a)pyrene in mg/kg	0.14	0.31		1	0.039				0.56	
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.93	0.048				0.69	
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.35	0.018				0.27	
Chrysene in mg/kg	0.13	0.13		1.2	0.044				0.73	
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.1	0.0048				0.085	
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.55	0.031				0.36	
Total cPAHs TEQ in mg/kg	0.14	0.31		1.3	0.053				0.766	
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB12 FD (10-11 ft) 12/22/10 RI	MG-SB12 (10-11 ft) 12/22/10 RI	MG-SB12 (12-13 ft) 12/22/10 RI	MG-SB12 (13-14 ft) 12/22/10 RI	MG-SB13 (2-3 ft) 12/20/10 RI	MG-SB13 (5-6 ft) 12/20/10 RI	MG-SB13 FD (7-8 ft) 12/20/10 RI	MG-SB13 (7-8 ft) 12/20/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			390	370	650	940	300	270 UJ	620	920
Oil Range Hydrocarbons in mg/kg			200	200	1,600	2,300	4,400	2,700	1,400	1,700
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	590 J	570 J	2,250 J	3,240 J	4,700 J	2,970 J	2,020 J	2,620 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										3.8
Aliphatics C12-C16 (EPH) in mg/kg										31
Aliphatics C16-C21 (EPH) in mg/kg										140
Aliphatics C21-C34 (EPH) in mg/kg										440
Aliphatics C8-C10 (EPH) in mg/kg										3.6
Aromatics C10-C12 (EPH) in mg/kg										2.9 U
Aromatics C12-C16 (EPH) in mg/kg										2.9 U
Aromatics C16-C21 (EPH) in mg/kg										170
Aromatics C21-C34 (EPH) in mg/kg										190
Aromatics C8-C10 (EPH) in mg/kg										2.9 U
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB12 FD (10-11 ft) 12/22/10 RI	MG-SB12 (10-11 ft) 12/22/10 RI	MG-SB12 (12-13 ft) 12/22/10 RI	MG-SB12 (13-14 ft) 12/22/10 RI	MG-SB13 (2-3 ft) 12/20/10 RI	MG-SB13 (5-6 ft) 12/20/10 RI	MG-SB13 FD (7-8 ft) 12/20/10 RI	MG-SB13 (7-8 ft) 12/20/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	13	16				1		
Acenaphthylene in mg/kg			0.058	0.07				0.037		
Anthracene in mg/kg	3.5	3.5	4.1	4.8				0.28		
Benzo(g,h,i)perylene in mg/kg			0.33	0.44				0.099		
Dibenzofuran in mg/kg	80	3,500	9.4	11				0.45		
Fluoranthene in mg/kg	2.6	2.6	21	27				1.4		
Fluorene in mg/kg	0.37	0.37	14	16				0.56		
Phenanthrene in mg/kg			41	48				1.6		
Pyrene in mg/kg	16	16	14	17				0.94		
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	6.7	8.1				0.13		
Naphthalene in mg/kg	1.6	1.6	9.3	13				0.28		
Total Naphthalenes in mg/kg			16	21.1				0.41		
Benz(a)anthracene in mg/kg	0.12	0.12	4.1	5.3				0.2		
Benzo(a)pyrene in mg/kg	0.14	0.31	1.4	1.8				0.12		
Benzo(b)fluoranthene in mg/kg	0.38	0.38	2.7	3.2				0.16		
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.79	0.91				0.04		
Chrysene in mg/kg	0.13	0.13	3.2	3.7				0.26		
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.12	0.16				0.032		
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.4	0.49				0.051		
Total cPAHs TEQ in mg/kg	0.14	0.31	2.24	2.85				0.171		
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB13 (9-10 ft) 12/20/10 RI	MG-SB13 (12-13 ft) 12/20/10 RI	MG-SB14 (2-3 ft) 12/20/10 RI	MG-SB14 (5-6 ft) 12/20/10 RI	MG-SB14 FD (7-8 ft) 12/20/10 RI	MG-SB14 (7-8 ft) 12/20/10 RI	MG-SB14 (9-10 ft) 12/20/10 RI	MG-SB14 (12-13 ft) 12/20/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			56	740	51	220 UJ	610	820	8.6 UJ	92
Oil Range Hydrocarbons in mg/kg			170	2,100	150	1,600	870	880	28 UJ	180
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	226 J	2,840 J	201 J	1,820 J	1,480 J	1,700 J	36.6 J	272 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										2.5 U
Aliphatics C12-C16 (EPH) in mg/kg										2.5 U
Aliphatics C16-C21 (EPH) in mg/kg										2.5 U
Aliphatics C21-C34 (EPH) in mg/kg										6.7
Aliphatics C8-C10 (EPH) in mg/kg										2.5 U
Aromatics C10-C12 (EPH) in mg/kg										2.5 U
Aromatics C12-C16 (EPH) in mg/kg										2.5 U
Aromatics C16-C21 (EPH) in mg/kg										4.5
Aromatics C21-C34 (EPH) in mg/kg										8.4
Aromatics C8-C10 (EPH) in mg/kg										2.5 U
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB13 (9-10 ft) 12/20/10 RI	MG-SB13 (12-13 ft) 12/20/10 RI	MG-SB14 (2-3 ft) 12/20/10 RI	MG-SB14 (5-6 ft) 12/20/10 RI	MG-SB14 FD (7-8 ft) 12/20/10 RI	MG-SB14 (7-8 ft) 12/20/10 RI	MG-SB14 (9-10 ft) 12/20/10 RI	MG-SB14 (12-13 ft) 12/20/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.018						0.037	0.082
Acenaphthylene in mg/kg			0.014						0.0093	0.023
Anthracene in mg/kg	3.5	3.5	0.037						0.019	0.06
Benzo(g,h,i)perylene in mg/kg			0.046						0.03	0.051
Dibenzofuran in mg/kg	80	3,500	0.029						0.037	0.067
Fluoranthene in mg/kg	2.6	2.6	0.22						0.1	0.35
Fluorene in mg/kg	0.37	0.37	0.026						0.041	0.061
Phenanthrene in mg/kg			0.18						0.15	0.34
Pyrene in mg/kg	16	16	0.18						0.091	0.27
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.03						0.17	0.11
Naphthalene in mg/kg	1.6	1.6	0.21						0.23	0.14
Total Naphthalenes in mg/kg			0.24						0.4	0.25
Benz(a)anthracene in mg/kg	0.12	0.12	0.034						0.029	0.083
Benzo(a)pyrene in mg/kg	0.14	0.31	0.037						0.03	0.079
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.045						0.035	0.084
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.015						0.012	0.031
Chrysene in mg/kg	0.13	0.13	0.047						0.034	0.11
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.0036						0.0035	0.0093
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.031						0.022	0.045
Total cPAHs TEQ in mg/kg	0.14	0.31	0.0503						0.0405	0.105
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB15 (3-4 ft) 12/20/10 RI	MG-SB15 (5-6 ft) 12/20/10 RI	MG-SB15 (7-8 ft) 12/20/10 RI	MG-SB15 (9-10 ft) 12/20/10 RI	MG-SB15 (12-13 ft) 12/20/10 RI	MG-SB16 (2-3 ft) 12/20/10 RI	MG-SB16 (5-6 ft) 12/20/10 RI	MG-SB16 (7-8 ft) 12/20/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			44	290	4.5 UJ	14 UJ	110	85 UJ	160 UJ	20 UJ
Oil Range Hydrocarbons in mg/kg			210	540	13 UJ	44 UJ	300	900	1,600	78 UJ
Bunker C in mg/kg	4,000	10,000								
Total TPHs in mg/kg	4,000	10,000	254 J	830 J	17.5 J	58.0 J	410 J	985 J	1,760 J	98.0 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg						2.3 U				
Aliphatics C12-C16 (EPH) in mg/kg						2.3 U				
Aliphatics C16-C21 (EPH) in mg/kg						2.3 U				
Aliphatics C21-C34 (EPH) in mg/kg						11				
Aliphatics C8-C10 (EPH) in mg/kg						2.3 U				
Aromatics C10-C12 (EPH) in mg/kg						2.3 U				
Aromatics C12-C16 (EPH) in mg/kg						2.3 U				
Aromatics C16-C21 (EPH) in mg/kg						2.8				
Aromatics C21-C34 (EPH) in mg/kg						3.8				
Aromatics C8-C10 (EPH) in mg/kg						2.3 U				
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB15 (3-4 ft) 12/20/10 RI	MG-SB15 (5-6 ft) 12/20/10 RI	MG-SB15 (7-8 ft) 12/20/10 RI	MG-SB15 (9-10 ft) 12/20/10 RI	MG-SB15 (12-13 ft) 12/20/10 RI	MG-SB16 (2-3 ft) 12/20/10 RI	MG-SB16 (5-6 ft) 12/20/10 RI	MG-SB16 (7-8 ft) 12/20/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		0.2	0.0032					0.0039
Acenaphthylene in mg/kg				0.022 U	0.0028 U					0.0054
Anthracene in mg/kg	3.5	3.5		0.15	0.0011 J					0.01
Benzo(g,h,i)perylene in mg/kg				0.042	0.0028 U					0.03
Dibenzofuran in mg/kg	80	3,500		0.081 U	0.0021 J					0.01
Fluoranthene in mg/kg	2.6	2.6		0.27	0.004					0.082
Fluorene in mg/kg	0.37	0.37		0.22	0.0028 J					0.0056
Phenanthrene in mg/kg				0.68	0.0089					0.058
Pyrene in mg/kg	16	16		0.51	0.0045					0.069
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000		0.45	0.008					0.013
Naphthalene in mg/kg	1.6	1.6		0.12	0.011					0.075
Total Naphthalenes in mg/kg				0.57	0.019					0.088
Benz(a)anthracene in mg/kg	0.12	0.12		0.19	0.0013 J					0.017
Benzo(a)pyrene in mg/kg	0.14	0.31		0.076	0.0028 U					0.02
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.063	0.0028 U					0.028
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.016	0.0028 U					0.009
Chrysene in mg/kg	0.13	0.13		0.26	0.0018 J					0.024
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.017	0.0028 U					0.0023 J
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.021	0.0028 U					0.021
Total cPAHs TEQ in mg/kg	0.14	0.31		0.109	0.00211 J					0.028
Conventional Chemistry Parameters (including other metals)										
Chloride in mg/kg										
pH in pH units	2.5 - 11	2.5 - 11								
Sulfide in mg/kg										
Total Organic Carbon in percent										

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB16 (9-10 ft) 12/20/10 RI	MG-SB16 (12-13 ft) 12/20/10 RI	SS-01 (2 ft.) 11/3/06 Pre-RI	SS-02 (1.5 ft.) 11/3/06 Pre-RI	SS-03 (1.5 ft.) 11/3/06 Pre-RI	SS-04 (1.5 ft.) 11/3/06 Pre-RI	SS-05 (3 ft.) 11/3/06 Pre-RI
Total Petroleum Hydrocarbons (TPH)									
Gasoline Range Hydrocarbons in mg/kg	100	100							
Diesel Range Hydrocarbons in mg/kg			97	3.9 UJ	335	615	994	451	1,590
Oil Range Hydrocarbons in mg/kg			130	11 UJ	366	1,490	591	294	268 U
Bunker C in mg/kg	4,000	10,000							
Total TPHs in mg/kg	4,000	10,000	227 J	14.9 J	701	2,105	1,585	745	1,724
Extractable Petroleum Hydrocarbons									
Aliphatics C10-C12 (EPH) in mg/kg									
Aliphatics C12-C16 (EPH) in mg/kg									
Aliphatics C16-C21 (EPH) in mg/kg									
Aliphatics C21-C34 (EPH) in mg/kg									
Aliphatics C8-C10 (EPH) in mg/kg									
Aromatics C10-C12 (EPH) in mg/kg									
Aromatics C12-C16 (EPH) in mg/kg									
Aromatics C16-C21 (EPH) in mg/kg									
Aromatics C21-C34 (EPH) in mg/kg									
Aromatics C8-C10 (EPH) in mg/kg									
Heavy Metals									
Arsenic in mg/kg	7	7							
Cadmium in mg/kg	1	1							
Chromium (Total) in mg/kg	260	260							
Copper in mg/kg	36	36							
Lead in mg/kg	81	81							
Mercury in mg/kg	0.1	0.1							
Nickel in mg/kg	48	48							
Zinc in mg/kg	85	85							
Polychlorinated Biphenyls (PCBs)									
Aroclor 1016 in mg/kg									
Aroclor 1221 in mg/kg									
Aroclor 1232 in mg/kg									
Aroclor 1242 in mg/kg									
Aroclor 1248 in mg/kg									
Aroclor 1254 in mg/kg									
Aroclor 1260 in mg/kg									
Total PCBs in mg/kg	1	10							

Table 7-5A - Soil Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	MG-SB16 (9-10 ft) 12/20/10 RI	MG-SB16 (12-13 ft) 12/20/10 RI	SS-01 (2 ft.) 11/3/06 Pre-RI	SS-02 (1.5 ft.) 11/3/06 Pre-RI	SS-03 (1.5 ft.) 11/3/06 Pre-RI	SS-04 (1.5 ft.) 11/3/06 Pre-RI	SS-05 (3 ft.) 11/3/06 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)									
Acenaphthene in mg/kg	0.26	0.26	0.029						
Acenaphthylene in mg/kg			0.021						
Anthracene in mg/kg	3.5	3.5	0.076						
Benzo(g,h,i)perylene in mg/kg			0.096						
Dibenzofuran in mg/kg	80	3,500	0.1						
Fluoranthene in mg/kg	2.6	2.6	0.36						
Fluorene in mg/kg	0.37	0.37	0.061						
Phenanthrene in mg/kg			0.25						
Pyrene in mg/kg	16	16	0.25						
1-Methylnaphthalene in mg/kg	35	4,500							
2-Methylnaphthalene in mg/kg	320	14,000	0.18						
Naphthalene in mg/kg	1.6	1.6	0.13						
Total Naphthalenes in mg/kg			0.31						
Benz(a)anthracene in mg/kg	0.12	0.12	0.13						
Benzo(a)pyrene in mg/kg	0.14	0.31	0.14						
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.15						
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.054						
Chrysene in mg/kg	0.13	0.13	0.14						
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.015						
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.091						
Total cPAHs TEQ in mg/kg	0.14	0.31	0.185						
Conventional Chemistry Parameters (including other metals)									
Chloride in mg/kg									
pH in pH units	2.5 - 11	2.5 - 11							
Sulfide in mg/kg									
Total Organic Carbon in percent									

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CF-MW01 09/30/09 RI	CF-MW01 09/30/09 Field Dup RI	CF-MW01 03/31/10 RI	CF-MW01 03/31/10 Field Dup RI	CF-MW02 09/30/09 RI	CF-MW02 03/31/10 RI	EMW-06S 07/08/93 Pre-RI	EMW-06S 09/28/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L			1,900	1,600	29 J	30 J	680	30 J		850
Oil Range Hydrocarbons in ug/L			1,400	2,000	520 U	520 U	680	28 J		530 U
Bunker C in ug/L										
Total TPHs in ug/L			3,300	3,600	289 J	290 J	1,360	58 J		1,115
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Mercury in ug/L	0.059	0.059	0.00456 J	0.00239 J	0.00221 J	0.0049 J	0.0108	0.00503	0.2 U	
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3	0.061	0.049	0.038	0.039	0.032	0.024		0.096
Acenaphthylene in ug/L			0.022 U	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Anthracene in ug/L	9.6	9.6	0.027	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U		0.014 J
Benzo(g,h,i)perylene in ug/L			0.0075 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Fluoranthene in ug/L	3.3	3.3	0.096	0.058	0.042	0.046	0.021 J	0.025		0.024
Fluorene in ug/L	3	3	0.037	0.022 J	0.018 J	0.018 J	0.019 J	0.015 J		0.02 U
Phenanthrene in ug/L			0.096	0.061	0.045	0.049	0.025	0.03		0.016 J
Pyrene in ug/L	15	15	0.069	0.042	0.022	0.027	0.015 J	0.023		0.022
1-Methylnaphthalene in ug/L										

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	CF-MW01 09/30/09 RI	CF-MW01 09/30/09 Field Dup RI	CF-MW01 03/31/10 RI	CF-MW01 03/31/10 Field Dup RI	CF-MW02 09/30/09 RI	CF-MW02 03/31/10 RI	EMW-06S 07/08/93 Pre-RI	EMW-06S 09/28/09 RI
2-Methylnaphthalene in ug/L			0.016 J	0.0074 J	0.02 U	0.0062 J	0.046	0.021		0.013 J
Naphthalene in ug/L	83	83	0.045	0.02 J	0.062	0.027	0.028	0.033		0.061
Total Naphthalenes in ug/L			0.061	0.0274 J	0.072	0.0332	0.074	0.054		0.074
Dibenzofuran in ug/L			0.021 J	0.013 J	0.02 U	0.02 U	0.058	0.04		0.02 U
Benz(a)anthracene in ug/L	0.02	0.02	0.019 J	0.01 J	0.02 U	0.02 U	0.0046 J	0.02 U		0.02 U
Benzo(a)pyrene in ug/L	0.02	0.02	0.01 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Benzo(b)fluoranthene in ug/L	0.02	0.02	0.017 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Benzo(k)fluoranthene in ug/L	0.02	0.02	0.0096 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Chrysene in ug/L	0.02	0.02	0.025	0.014 J	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Dibenzo(a,h)anthracene in ug/L	0.02	0.02	0.054	0.046 U	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02	0.0087 J	0.022 U	0.02 U	0.02 U	0.022 U	0.02 U		0.02 U
Total cPAHs TEQ in ug/L	0.02	0.02	0.0211	0.0154	ND	ND	0.016	ND		ND
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3										
Chloride in mg/L										
Dissolved Calcium in mg/L										
Dissolved Iron in mg/L										
Dissolved Magnesium in mg/L										
Dissolved Manganese in mg/L	0.1	0.1								
Dissolved Potassium in mg/L										
Dissolved Sodium in mg/L										
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										
Nitrite as Nitrogen in mg/L										
Sulfate in mg/L										
Sulfide in mg/L										
Total Organic Carbon in ug/L										
Total Suspended Solids in mg/L			247	206	129 J	242 J	722	269		7.5
Field Parameters										
Conductivity in us/cm			40,970		38,920		10,810	8,021	4,540	2,599
Dissolved Oxygen in mg/L			0.74		0.56		0.83	2.51	1.19	0.53
Eh (ORP) in mVolts			-257.4		-147.6		-225.8	-71.3	-82	-29.6
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.65		6.72		6.43	6.56	6.7	6.32
Practical Salinity (Calculated) in PSU			25.8		24.4		6.0	4.4	2.4	1.3
Salinity in g/L									2	
Temperature in deg C			16.95		13.21		19.2	13	15.9	19.69
Turbidity in NTU			10		20		20			10

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-06S 03/29/10 RI	EMW-06S 03/31/10 RI	EMW-07S 07/20/93 Pre-RI	EMW-07S 09/30/09 RI	EMW-07S 03/31/10 RI	EMW-08S 07/07/93 Pre-RI	EMW-08S 12/16/93 Pre-RI	EMW-08S 09/29/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L			25 U				25 J			
Oil Range Hydrocarbons in ug/L			520 U				500 U			
Bunker C in ug/L										
Total TPHs in ug/L			ND				275 J			
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5								
Dissolved Cadmium in ug/L	8.8	8.8								
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260								
Dissolved Chromium (VI) in ug/L	50	50								
Dissolved Copper in ug/L	3.1	3.1								
Dissolved Lead in ug/L	8.1	8.1								
Dissolved Mercury in ug/L	0.059	0.059			0.2 U	0.00084 J	0.00113	0.2 U	0.2 U	0.001 U
Dissolved Nickel in ug/L	8.2	8.2								
Dissolved Zinc in ug/L	81	81								
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3		0.16						
Acenaphthylene in ug/L				0.019 U						
Anthracene in ug/L	9.6	9.6		0.019 U						
Benzo(g,h,i)perylene in ug/L				0.019 U						
Fluoranthene in ug/L	3.3	3.3		0.029						
Fluorene in ug/L	3	3		0.052						
Phenanthrene in ug/L				0.022						
Pyrene in ug/L	15	15		0.018 J						
1-Methylnaphthalene in ug/L										

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-06S 03/29/10 RI	EMW-06S 03/31/10 RI	EMW-07S 07/20/93 Pre-RI	EMW-07S 09/30/09 RI	EMW-07S 03/31/10 RI	EMW-08S 07/07/93 Pre-RI	EMW-08S 12/16/93 Pre-RI	EMW-08S 09/29/09 RI
2-Methylnaphthalene in ug/L				0.026						
Naphthalene in ug/L	83	83		0.16						
Total Naphthalenes in ug/L				0.186						
Dibenzofuran in ug/L				0.019 U						
Benz(a)anthracene in ug/L	0.02	0.02		0.019 U						
Benzo(a)pyrene in ug/L	0.02	0.02		0.019 U						
Benzo(b)fluoranthene in ug/L	0.02	0.02		0.019 U						
Benzo(k)fluoranthene in ug/L	0.02	0.02		0.019 U						
Chrysene in ug/L	0.02	0.02		0.019 U						
Dibenzo(a,h)anthracene in ug/L	0.02	0.02		0.019 U						
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02		0.019 U						
Total cPAHs TEQ in ug/L	0.02	0.02		ND						
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3									100	
Chloride in mg/L									3,420	
Dissolved Calcium in mg/L									610	
Dissolved Iron in mg/L										
Dissolved Magnesium in mg/L									320	
Dissolved Manganese in mg/L	0.1	0.1							20	
Dissolved Potassium in mg/L									28	
Dissolved Sodium in mg/L									1,500	
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										
Nitrite as Nitrogen in mg/L										
Sulfate in mg/L									327	
Sulfide in mg/L									0.05 U	
Total Organic Carbon in ug/L									1,500	
Total Suspended Solids in mg/L			195				155			
Field Parameters										
Conductivity in us/cm			2,286			32,150	26,020	1,250	14,280	10,770
Dissolved Oxygen in mg/L			0.73			0.82	0.44	1.51	2.05	0.63
Eh (ORP) in mVolts			-22.8			-220.1	-139	170		-0230
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.33			6.51	6.48	7.08		6.84
Practical Salinity (Calculated) in PSU			1.2			19.7	15.6	0.6	8.1	6.0
Salinity in g/L								0.7		
Temperature in deg C			11.68			16.3	11.9	19.9	9.6	18.75
Turbidity in NTU			20			10	20			10

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-08S 03/31/10 RI	EMW-12S 07/09/93 Pre-RI	EMW-12S 12/10/93 Pre-RI	EMW-12S 07/26/04 Pre-RI	EMW-12S 09/30/09 RI	EMW-12S 03/30/10 RI	EMW-16S 12/16/93 Pre-RI	EMW-16S 07/26/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L						250 UJ				420 J
Diesel Range Hydrocarbons in ug/L			20 J			250 U	540	29 U		500
Oil Range Hydrocarbons in ug/L			520 U			500 U	560 U	49 J		500 U
Bunker C in ug/L										
Total TPHs in ug/L			280 J			ND	820	78 J		750
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L										
Aliphatics C12-C16 (EPH) in ug/L										
Aliphatics C16-C21 (EPH) in ug/L										
Aliphatics C21-C34 (EPH) in ug/L										
Aliphatics C8-C10 (EPH) in ug/L										
Aromatics C10-C12 (EPH) in ug/L										
Aromatics C12-C16 (EPH) in ug/L										
Aromatics C16-C21 (EPH) in ug/L										
Aromatics C21-C34 (EPH) in ug/L										
Aromatics C8-C10 (EPH) in ug/L										
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5				79.6	7.53	4.1		42
Dissolved Cadmium in ug/L	8.8	8.8				0.5 U	0.028	0.009 J		2 U
Dissolved Chromium (III) in ug/L						1,480				4,530
Dissolved Chromium (Total) in ug/L	260	260				1,480	329	98.4		4,750
Dissolved Chromium (VI) in ug/L	50	50				224 U	50 U	5 J		224
Dissolved Copper in ug/L	3.1	3.1				8	1.73	1.34		14
Dissolved Lead in ug/L	8.1	8.1				2 U	0.227	0.211		2 U
Dissolved Mercury in ug/L	0.059	0.059	0.00046 U	0.2 U	0.2 U	1 U	0.00268 J	0.00286	0.2 U	1 U
Dissolved Nickel in ug/L	8.2	8.2				9	2.35	2.63		27
Dissolved Zinc in ug/L	81	81				10 U	1.17	1 J		20
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3				1.0 U	0.12	0.096		49
Acenaphthylene in ug/L						1.0 U	0.022 U	0.02 U		0.15
Anthracene in ug/L	9.6	9.6				1.0 U	0.033	0.029		6.0
Benzo(g,h,i)perylene in ug/L						1.0 U	0.022 U	0.02 U		0.38
Fluoranthene in ug/L	3.3	3.3				1.0 U	0.027	0.018 J		43
Fluorene in ug/L	3	3				1.0 U	0.041	0.039		42
Phenanthrene in ug/L						1.0 U	0.0092 J	0.0051 J		91
Pyrene in ug/L	15	15				1.0 U	0.026	0.016 J		31
1-Methylnaphthalene in ug/L						1.0 U				21

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-08S 03/31/10 RI	EMW-12S 07/09/93 Pre-RI	EMW-12S 12/10/93 Pre-RI	EMW-12S 07/26/04 Pre-RI	EMW-12S 09/30/09 RI	EMW-12S 03/30/10 RI	EMW-16S 12/16/93 Pre-RI	EMW-16S 07/26/04 Pre-RI
2-Methylnaphthalene in ug/L						1.0 U	0.022 U	0.02 U		34
Naphthalene in ug/L	83	83				1.0 U	0.022 U	0.057		210
Total Naphthalenes in ug/L						ND	ND	0.067		265
Dibenzofuran in ug/L						10 U	0.019 J	0.011 J		48
Benz(a)anthracene in ug/L	0.02	0.02				1.0 U	0.0045 J	0.02 U		8.7
Benzo(a)pyrene in ug/L	0.02	0.02				1.0 U	0.022 U	0.02 U		2.8
Benzo(b)fluoranthene in ug/L	0.02	0.02				1.0 U	0.022 U	0.02 U		4.4
Benzo(k)fluoranthene in ug/L	0.02	0.02				1.0 U	0.022 U	0.02 U		2.4
Chrysene in ug/L	0.02	0.02				1.0 U	0.022 U	0.02 U		4.7
Dibenzo(a,h)anthracene in ug/L	0.02	0.02				1.0 U	0.022 U	0.02 U		0.18
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02				1.0 U	0.022 U	0.02 U		0.36
Total cPAHs TEQ in ug/L	0.02	0.02				ND	0.016	ND		4.45
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3					1,000				2,160	
Chloride in mg/L					445				560	
Dissolved Calcium in mg/L					280				960	
Dissolved Iron in mg/L						44.2				11.8
Dissolved Magnesium in mg/L					47				200	
Dissolved Manganese in mg/L	0.1	0.1			2.9	5.8			7.2	6.57
Dissolved Potassium in mg/L					18				57	
Dissolved Sodium in mg/L					300				540	
Formaldehyde in ug/L	1,600	1,600				18				17
Nitrate + Nitrite in mg/L						0.500 U				0.500 U
Nitrate as Nitrogen in mg/L						0.500 U				0.500 U
Nitrite as Nitrogen in mg/L						0.500 U				0.500 U
Sulfate in mg/L					100 U	551			100 U	735
Sulfide in mg/L					0.5 U				1.25 U	
Total Organic Carbon in ug/L					76,200				1,420,000	
Total Suspended Solids in mg/L			16			4.8	5 U	5 U		23
Field Parameters										
Conductivity in us/cm			9,711	1,970	2,490	2,858	1,597	955	5,390	5,672
Dissolved Oxygen in mg/L			0.6	0.78	1.18	0.83	0.58	0.33	1.4	0.67
Eh (ORP) in mVolts			-205.3	-87	-127	-189.7	-336.2	-206.5		-224.5
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.78	7.1	6.83	6.57	6.67	6.84		6.58
Practical Salinity (Calculated) in PSU			5.4	1.0	1.3	1.5	0.8	0.5	2.9	3.0
Salinity in g/L				0.5	0.8					
Temperature in deg C			11.34	19.2	13.4	20.44	18.26	12.05	9.7	20.93
Turbidity in NTU			10			2.9	10	10		

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-16S 09/30/09 RI	EMW-16S 03/30/10 RI	EMW-16S 12/16/10 RI	EMW-18S 12/16/93 Pre-RI	EMW-18S 07/26/04 Pre-RI	EMW-18S 03/29/10 RI	EMW-20S 12/02/93 Pre-RI	EMW-20S 09/29/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L							250 U			
Diesel Range Hydrocarbons in ug/L			1,800	450	26 UJ		250 U	21 U		
Oil Range Hydrocarbons in ug/L			720	58 J	520 UJ		500 U	500 U		
Bunker C in ug/L										
Total TPHs in ug/L			2,520	508	286 J		ND	ND		
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L					40 UJ					
Aliphatics C12-C16 (EPH) in ug/L					40 UJ					
Aliphatics C16-C21 (EPH) in ug/L					40 UJ					
Aliphatics C21-C34 (EPH) in ug/L					40 UJ					
Aliphatics C8-C10 (EPH) in ug/L					40 UJ					
Aromatics C10-C12 (EPH) in ug/L					40 UJ					
Aromatics C12-C16 (EPH) in ug/L					40 UJ					
Aromatics C16-C21 (EPH) in ug/L					62 J					
Aromatics C21-C34 (EPH) in ug/L					40 UJ					
Aromatics C8-C10 (EPH) in ug/L					40 UJ					
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5	15.7	0.17 U			0.5 U			
Dissolved Cadmium in ug/L	8.8	8.8	0.266	0.067 U			0.5 U			
Dissolved Chromium (III) in ug/L							0.5 U			
Dissolved Chromium (Total) in ug/L	260	260	2,690	3.9			1 U			
Dissolved Chromium (VI) in ug/L	50	50	50 U	50 U			11 U			
Dissolved Copper in ug/L	3.1	3.1	11.1	0.042 U			1 U			
Dissolved Lead in ug/L	8.1	8.1	0.462	0.1 U			2 U			
Dissolved Mercury in ug/L	0.059	0.059	0.0628	0.109		0.2 U	0.1 U		0.2 U	0.0102
Dissolved Nickel in ug/L	8.2	8.2	23.9	1.67 U			1 U			
Dissolved Zinc in ug/L	81	81	11.1	1.67 U			10 U			
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3	55	37	23		0.10 U			
Acenaphthylene in ug/L			0.17 U	0.15	0.097 U		0.10 U			
Anthracene in ug/L	9.6	9.6	4	3.6	2.3		0.10 U			
Benzo(g,h,i)perylene in ug/L			0.36	0.43	0.15		0.10 U			
Fluoranthene in ug/L	3.3	3.3	33	24	16		0.10 U			
Fluorene in ug/L	3	3	47	30	19		0.10 U			
Phenanthrene in ug/L			55	43	27		0.10 U			
Pyrene in ug/L	15	15	26	18	8.1		0.10 U			
1-Methylnaphthalene in ug/L							0.10 U			

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-16S 09/30/09 RI	EMW-16S 03/30/10 RI	EMW-16S 12/16/10 RI	EMW-18S 12/16/93 Pre-RI	EMW-18S 07/26/04 Pre-RI	EMW-18S 03/29/10 RI	EMW-20S 12/02/93 Pre-RI	EMW-20S 09/29/09 RI
2-Methylnaphthalene in ug/L			15	12	8.4		0.10 U			
Naphthalene in ug/L	83	83	64	59	42		0.10 U			
Total Naphthalenes in ug/L			79.0	71.0	50.4		ND			
Dibenzofuran in ug/L			40	24	15		1.0 U			
Benz(a)anthracene in ug/L	0.02	0.02	4.5	4.2	2.1		0.10 U			
Benzo(a)pyrene in ug/L	0.02	0.02	1.5	1.5	0.62		0.10 U			
Benzo(b)fluoranthene in ug/L	0.02	0.02	3.2	2.8	1.2		0.10 U			
Benzo(k)fluoranthene in ug/L	0.02	0.02	0.76	0.77	0.33		0.10 U			
Chrysene in ug/L	0.02	0.02	1.7	1.8	0.76		0.10 U			
Dibenzo(a,h)anthracene in ug/L	0.02	0.02	0.11	0.14	0.051		0.10 U			
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02	0.35	0.39	0.13		0.10 U			
Total cPAHs TEQ in ug/L	0.02	0.02	2.41	2.35	1.01		ND			
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3						769				
Chloride in mg/L						5 U				
Dissolved Calcium in mg/L						350			700	
Dissolved Iron in mg/L							0.19			
Dissolved Magnesium in mg/L						21			330	
Dissolved Manganese in mg/L	0.1	0.1				0.3	0.022		81	
Dissolved Potassium in mg/L						8.9			34	
Dissolved Sodium in mg/L						54			2,000	
Formaldehyde in ug/L	1,600	1,600					6 U			
Nitrate + Nitrite in mg/L							0.010 U			
Nitrate as Nitrogen in mg/L							0.010 U			
Nitrite as Nitrogen in mg/L							0.010 U			
Sulfate in mg/L						341	285			
Sulfide in mg/L						20.7				
Total Organic Carbon in ug/L						3,100				
Total Suspended Solids in mg/L			7.5	15.5	5 U		2.7	5 U		
Field Parameters										
Conductivity in us/cm			5,178	5,665	4,073	1,820	993	466	15,400	13,800
Dissolved Oxygen in mg/L			0.44	0.2	0.49	2.93	0.9	1.46	2.26	0.48
Eh (ORP) in mVolts			-402	-254.5	-101.6		-213.9	42.7	-15	-233.3
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.73	6.66	6.56		6.73	7.49	5.61	6.48
Practical Salinity (Calculated) in PSU			2.7	3.0		0.9	0.5	0.2	8.8	7.8
Salinity in g/L									8.7	
Temperature in deg C			19.91	11.7	11.82	10.8	18.86	11.45	13.3	20.49
Turbidity in NTU			20	20			7.28	10		10

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-20S 04/05/10 RI	MG-MW01 07/27/04 Pre-RI	MG-MW01 09/28/09 RI	MG-MW01 03/29/10 RI	MG-MW01 12/16/10 RI	MG-MW02 03/29/10 RI	MG-MW03 03/29/10 RI	MG-MW03 12/16/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L				250 U						
Diesel Range Hydrocarbons in ug/L			26 U		1,100	46 U	260 UJ	26 U	200 U	26 J
Oil Range Hydrocarbons in ug/L			41 J		520 U	520 U	24 J	510 U	630 U	520 UJ
Bunker C in ug/L				1,200						
Total TPHs in ug/L			67 J	1,200	1,360	ND	154 J	ND	ND	286 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L							40 U			40 U
Aliphatics C12-C16 (EPH) in ug/L							40 U			40 U
Aliphatics C16-C21 (EPH) in ug/L							40 U			40 U
Aliphatics C21-C34 (EPH) in ug/L							40 U			40 U
Aliphatics C8-C10 (EPH) in ug/L							40 U			40 U
Aromatics C10-C12 (EPH) in ug/L							40 U			90
Aromatics C12-C16 (EPH) in ug/L							40 U			50
Aromatics C16-C21 (EPH) in ug/L							40 U			60
Aromatics C21-C34 (EPH) in ug/L							40 U			40 U
Aromatics C8-C10 (EPH) in ug/L							40 U			40 U
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5		7.9						
Dissolved Cadmium in ug/L	8.8	8.8		0.5 U						
Dissolved Chromium (III) in ug/L				1,310						
Dissolved Chromium (Total) in ug/L	260	260		1,310						
Dissolved Chromium (VI) in ug/L	50	50		112 U						
Dissolved Copper in ug/L	3.1	3.1		3						
Dissolved Lead in ug/L	8.1	8.1		2 U						
Dissolved Mercury in ug/L	0.059	0.059	0.00172	0.1 U						
Dissolved Nickel in ug/L	8.2	8.2		6						
Dissolved Zinc in ug/L	81	81		10 U						
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3		18	30	13	17	0.82	20	26
Acenaphthylene in ug/L				0.22	0.082	0.047	0.08	0.02 U	0.07 U	0.091 U
Anthracene in ug/L	9.6	9.6		0.88	0.95	0.28	0.21	0.042	1.5	1.8
Benzo(g,h,i)perylene in ug/L				0.10 U	0.06	0.014 J	0.0066 J	0.0054 J	0.039	0.038
Fluoranthene in ug/L	3.3	3.3		4.5	4.9	1.2	0.64	0.14	4.2	5.9
Fluorene in ug/L	3	3		9.2	18	5.4	7.1	0.12	15	18
Phenanthrene in ug/L				8.9	2.3	0.056	0.063	0.26	19	24
Pyrene in ug/L	15	15		2.8	3.4	0.97	0.43	0.16	3	3.5
1-Methylnaphthalene in ug/L				6.0						

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-20S 04/05/10 RI	MG-MW01 07/27/04 Pre-RI	MG-MW01 09/28/09 RI	MG-MW01 03/29/10 RI	MG-MW01 12/16/10 RI	MG-MW02 03/29/10 RI	MG-MW03 03/29/10 RI	MG-MW03 12/16/10 RI
2-Methylnaphthalene in ug/L				5.7	0.31	0.0057 J	0.0072 J	0.12	5	8.2
Naphthalene in ug/L	83	83		27	5.4	0.072	0.31 U	1.1	87	160
Total Naphthalenes in ug/L				38.7	5.71	0.0777	0.3172 J	1.22	92	168.2
Dibenzofuran in ug/L				4.8	9.1	3.6	4.4	0.057	13	18
Benz(a)anthracene in ug/L	0.02	0.02		0.42	0.55	0.14	0.06	0.018 J	0.51	0.67
Benzo(a)pyrene in ug/L	0.02	0.02		0.13	0.16	0.038	0.019 J	0.0088 J	0.13	0.16
Benzo(b)fluoranthene in ug/L	0.02	0.02		0.16	0.32	0.079	0.037	0.013 J	0.28	0.33
Benzo(k)fluoranthene in ug/L	0.02	0.02		0.10 U	0.083	0.022	0.0095 J	0.02 U	0.063	0.09
Chrysene in ug/L	0.02	0.02		0.37	0.41	0.083	0.044	0.011 J	0.39	0.69
Dibenzo(a,h)anthracene in ug/L	0.02	0.02		0.10 U	0.013 J	0.0044 J	0.0026 J	0.02 U	0.013 J	0.015 J
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02		0.10 U	0.043	0.01 J	0.0095 J	0.02 U	0.022	0.026
Total cPAHs TEQ in ug/L	0.02	0.02		0.207	0.265	0.0644	0.0313	0.015 J	0.223	0.28
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3										
Chloride in mg/L										
Dissolved Calcium in mg/L										
Dissolved Iron in mg/L				5.99						
Dissolved Magnesium in mg/L										
Dissolved Manganese in mg/L	0.1	0.1		1.93						
Dissolved Potassium in mg/L										
Dissolved Sodium in mg/L										
Formaldehyde in ug/L	1,600	1,600		10						
Nitrate + Nitrite in mg/L				0.500 U						
Nitrate as Nitrogen in mg/L				0.500 U						
Nitrite as Nitrogen in mg/L				0.500 U						
Sulfate in mg/L				181						
Sulfide in mg/L										
Total Organic Carbon in ug/L										
Total Suspended Solids in mg/L			92	7	5 U	5.5	5 U	25	86	15
Field Parameters										
Conductivity in us/cm			13,400	1,303	1,583	726	699	635	14,150	1,315
Dissolved Oxygen in mg/L			0.73	0.62	0.38	0.33	0.09	0.17	0.14	0.17
Eh (ORP) in mVolts			-47.3	-204.3	-28.2	-28.2	-152	2.5	-21.6	-136
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.21	6.45	6.6	7.46	6.99	8.39	7.33	6.53
Practical Salinity (Calculated) in PSU			7.6	0.6	0.8	0.3		0.3	8.1	
Salinity in g/L										
Temperature in deg C			12.01	17.97	18.08	10.57	11.39	11.27	13.8	14.2
Turbidity in NTU			10	8.50	10	10	10	15	50	

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	MG-MW04 12/21/10 RI	MG-MW05 12/20/10 RI	MG-MW05 12/20/10 Field Dup RI
Total Petroleum Hydrocarbons (TPH)					
Gasoline Range Hydrocarbons in ug/L					
Diesel Range Hydrocarbons in ug/L			110 UJ	180 UJ	120 UJ
Oil Range Hydrocarbons in ug/L			190 UJ	56 UJ	81 UJ
Bunker C in ug/L					
Total TPHs in ug/L			300 J	236 J	201 J
Extractable Petroleum Hydrocarbons					
Aliphatics C10-C12 (EPH) in ug/L			40 U	40 U	40 U
Aliphatics C12-C16 (EPH) in ug/L			40 U	40 U	40 U
Aliphatics C16-C21 (EPH) in ug/L			40 U	40 U	40 U
Aliphatics C21-C34 (EPH) in ug/L			40	40 U	40 U
Aliphatics C8-C10 (EPH) in ug/L			40 U	40 U	40 U
Aromatics C10-C12 (EPH) in ug/L			40 U	250	270
Aromatics C12-C16 (EPH) in ug/L			46	160	180
Aromatics C16-C21 (EPH) in ug/L			78	230	240
Aromatics C21-C34 (EPH) in ug/L			40 U	78	120
Aromatics C8-C10 (EPH) in ug/L			40 U	40 U	40 U
Dissolved Metals					
Dissolved Arsenic in ug/L	5	5			
Dissolved Cadmium in ug/L	8.8	8.8			
Dissolved Chromium (III) in ug/L					
Dissolved Chromium (Total) in ug/L	260	260			
Dissolved Chromium (VI) in ug/L	50	50			
Dissolved Copper in ug/L	3.1	3.1			
Dissolved Lead in ug/L	8.1	8.1			
Dissolved Mercury in ug/L	0.059	0.059			
Dissolved Nickel in ug/L	8.2	8.2			
Dissolved Zinc in ug/L	81	81			
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene in ug/L	3.3	3.3	3.7	42	41
Acenaphthylene in ug/L			0.096 U	0.25 U	0.26 U
Anthracene in ug/L	9.6	9.6	0.81	3.0	3.6
Benzo(g,h,i)perylene in ug/L			0.089	0.34	0.39
Fluoranthene in ug/L	3.3	3.3	3.1	19	20
Fluorene in ug/L	3	3	2.6	26	26
Phenanthrene in ug/L			5.8	44	46
Pyrene in ug/L	15	15	3.1	14	14
1-Methylnaphthalene in ug/L					

Table 7-5B - Groundwater TPH, PAH, and Metals Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	MG-MW04 12/21/10 RI	MG-MW05 12/20/10 RI	MG-MW05 12/20/10 Field Dup RI
2-Methylnaphthalene in ug/L			7.7	61	60
Naphthalene in ug/L	83	83	15	450	440
Total Naphthalenes in ug/L			22.7	511	500
Dibenzofuran in ug/L			1.5	26	24
Benz(a)anthracene in ug/L	0.02	0.02	0.53	2.1	2.3
Benzo(a)pyrene in ug/L	0.02	0.02	0.33	1.2	1.3
Benzo(b)fluoranthene in ug/L	0.02	0.02	0.25	1.3	1.4
Benzo(k)fluoranthene in ug/L	0.02	0.02	0.065	0.36	0.40
Chrysene in ug/L	0.02	0.02	0.88	2.8	3.1
Dibenzo(a,h)anthracene in ug/L	0.02	0.02	0.057	0.11	0.14
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02	0.054	0.23	0.25
Total cPAHs TEQ in ug/L	0.02	0.02	0.434	1.64	1.78
Conventional Chemistry Parameters (including other metals)					
Alkalinity (Total) in mg/L as CaCO3					
Chloride in mg/L					
Dissolved Calcium in mg/L					
Dissolved Iron in mg/L					
Dissolved Magnesium in mg/L					
Dissolved Manganese in mg/L	0.1	0.1			
Dissolved Potassium in mg/L					
Dissolved Sodium in mg/L					
Formaldehyde in ug/L	1,600	1,600			
Nitrate + Nitrite in mg/L					
Nitrate as Nitrogen in mg/L					
Nitrite as Nitrogen in mg/L					
Sulfate in mg/L					
Sulfide in mg/L					
Total Organic Carbon in ug/L					
Total Suspended Solids in mg/L			113	6.5	8.5
Field Parameters					
Conductivity in us/cm			2,017	5,616	
Dissolved Oxygen in mg/L			0.54	0.43	
Eh (ORP) in mVolts			-254.7	-237	
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.74	6.82	
Practical Salinity (Calculated) in PSU					
Salinity in g/L					
Temperature in deg C			12.9	11.88	
Turbidity in NTU			389	9.04	

Table 7-5C - Groundwater VOC, SVOC, and PCB Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-12S 07/26/04 Pre-RI	EMW-16S 07/26/04 Pre-RI	EMW-18S 07/26/04 Pre-RI	MG-MW01 07/27/04 Pre-RI
Other Semivolatiles						
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	10 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	10 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene in ug/L	960	960	10 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene in ug/L	5	5	10 U	1.0 U	1.0 U	1.0 U
2,4,5-Trichlorophenol in ug/L	3,600	3,600	50 U	5.0 U	5.0 U	5.0 U
2,4,6-Trichlorophenol in ug/L	2.4	2.4	50 U	5.0 U	5.0 U	5.0 U
2,4-Dichlorophenol in ug/L	73	73	30 U	3.0 U	3.0 U	3.0 U
2,4-Dimethylphenol in ug/L	200	200	30 U	3.0 U	3.0 U	3.0 U
2,4-Dinitrophenol in ug/L	1,400	1,400	250 U	25 U	25 U	25 U
2-Chloronaphthalene in ug/L	390	390	10 U	1.0 U	1.0 U	1.0 U
2-Chlorophenol in ug/L	37	37	10 U	1.0 U	1.0 U	1.0 U
2-Methylphenol in ug/L			10 U	1.0 U	1.0 U	1.0 U
2-Nitroaniline in ug/L			50 U	5.0 U	5.0 U	5.0 U
2-Nitrophenol in ug/L			50 U	5.0 U	5.0 U	5.0 U
3,3'-Dichlorobenzidine in ug/L	2	2	50 U	5.0 U	5.0 U	5.0 U
3-Nitroaniline in ug/L			60 U	6.0 U	6.0 U	6.0 U
4,6-Dinitro-2-methylphenol in ug/L			150 U	15 U	15 U	15 U
4-Bromophenyl phenyl ether in ug/L			10 U	1.0 U	1.0 U	1.0 U
4-Chloro-3-methylphenol in ug/L			20 U	2.0 U	2.0 U	2.0 U
4-Chloroaniline in ug/L			30 U	3.0 U	3.0 U	3.0 U
4-Chlorophenyl phenyl ether in ug/L			10 U	1.0 U	1.0 U	1.0 U
4-Methylphenol in ug/L			10 U	1.0 U	1.0 U	13
4-Nitroaniline in ug/L			50 U	5.0 U	5.0 U	5.0 U
4-Nitrophenol in ug/L			50 U	5.0 U	5.0 U	5.0 U
Benzoic acid in ug/L			100 U	10 U	10 U	15
Benzyl alcohol in ug/L			50 U	5.0 U	5.0 U	5.0 U
Benzyl butyl phthalate in ug/L	0.35	0.35	10 U	1.0 U	1.0 U	1.0 U
Bis(2-chloro-1-methylethyl) ether in ug/L	14	14	10 U	1.0 U	1.0 U	1.0 U
Bis(2-chloroethoxy)methane in ug/L			10 U	1.0 U	1.0 U	1.0 U
Bis(2-chloroethyl) ether in ug/L	0.53	0.53	20 U	2.0 U	2.0 U	2.0 U
Bis(2-ethylhexyl) phthalate in ug/L	1	1	12 U	1.0 U	1.0 U	1.0 U
Carbazole in ug/L			10 U	16	1.0 U	2.5
Dibenzofuran in ug/L			10 U	48	1.0 U	4.8
Diethyl phthalate in ug/L	740	740	10 U	1.0 U	1.0 U	1.0 U
Dimethyl phthalate in ug/L	1,100,000	1,100,000	10 U	1.0 U	1.0 U	1.0 U
Di-n-butyl phthalate in ug/L	140	140	10 U	1.0 U	1.0 U	1.0 U
Di-n-octyl phthalate in ug/L	0.2	0.2	10 U	1.0 U	1.0 U	1.0 U
Hexachlorobenzene in ug/L	0.2	0.2	10 U	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene in ug/L	0.2	0.2	20 U	2.0 U	2.0 U	2.0 U
Hexachlorocyclopentadiene in ug/L	1,100	1,100	50 U	5.0 U	5.0 U	5.0 U
Hexachloroethane in ug/L	3.3	3.3	20 U	2.0 U	2.0 U	2.0 U
Isophorone in ug/L	600	600	10 U	1.0 U	1.0 U	1.0 U
Nitrobenzene in ug/L	690	690	10 U	1.0 U	1.0 U	1.0 U
N-Nitroso-di-n-propylamine in ug/L	0.32	0.32	20 U	2.0 U	2.0 U	2.0 U
N-Nitrosodiphenylamine in ug/L	3.7	3.7	10 U	1.0 U	1.0 U	1.0 U
Pentachlorophenol in ug/L	3	3	50 U	5.0 U	5.0 U	5.0 U
Phenol in ug/L	216,000	216,000	20 U	2.0 U	2.0 U	18
2,4-Dinitrotoluene in ug/L	3.4	3.4	50 U	5.0 U	5.0 U	5.0 U
2,6-Dinitrotoluene in ug/L			50 U	5.0 U	5.0 U	5.0 U
Volatile Organic Compounds (VOC)						
1,1,1,2-Tetrachloroethane in ug/L	7.4	74	5.0 UJ	5.0 UJ	1.0 U	10 U
1,1,1-Trichloroethane in ug/L	11,000	25,000	5.0 UJ	5.0 UJ	1.0 U	10 U
1,1,2 - Trichlorotrifluoroethane in ug/L	1,100	2,400	10 UJ	10 UJ	2.0 U	20 U

Table 7-5C - Groundwater VOC, SVOC, and PCB Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-12S 07/26/04 Pre-RI	EMW-16S 07/26/04 Pre-RI	EMW-18S 07/26/04 Pre-RI	MG-MW01 07/27/04 Pre-RI
1,1,2,2-Tetrachloroethane in ug/L	4	4	5.0 UJ	5.0 UJ	1.0 U	10 U
1,1,2-Trichloroethane in ug/L	7.9	16	5.0 UJ	5.0 UJ	1.0 U	10 U
1,1-Dichloroethane in ug/L	2,300	5,000	5.0 UJ	5.0 UJ	1.0 U	10 U
1,1-Dichloroethene in ug/L	3.2	3.2	5.0 UJ	5.0 UJ	1.0 U	10 U
1,1-Dichloropropene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
1,2,3-Trichlorobenzene in ug/L			25 UJ	25 UJ	5.0 U	50 U
1,2,3-Trichloropropane in ug/L			15 UJ	15 UJ	3.0 U	30 U
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	25 UJ	25 UJ	5.0 U	50 U
1,2,4-Trimethylbenzene in ug/L	24	52	5.0 UJ	5.0 UJ	1.0 U	10 U
1,2-Dibromo-3-chloropropane in ug/L			25 UJ	25 UJ	5.0 U	50 U
1,2-Dibromoethane (EDB) in ug/L	2	7.4	5.0 UJ	5.0 UJ	1.0 U	10 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	5.0 UJ	5.0 UJ	1.0 U	10 U
1,2-Dichloroethane (EDC) in ug/L	4.2	37	5.0 UJ	5.0 UJ	1.0 U	10 U
1,2-Dichloropropane in ug/L	15	15	5.0 UJ	5.0 UJ	1.0 U	10 U
1,3,5-Trimethylbenzene in ug/L	25	54	5.0 UJ	5.0 UJ	1.0 U	10 U
1,3-Dichlorobenzene in ug/L	960	960	5.0 UJ	5.0 UJ	1.0 U	10 U
1,3-Dichloropropane in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
1,4-Dichloro-2-Butene in ug/L			25 UJ	25 UJ	5.0 U	50 U
1,4-Dichlorobenzene in ug/L	5	5	5.0 UJ	5.0 UJ	1.0 U	10 U
2,2-Dichloropropane in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
2-Butanone in ug/L	350,000	760,000	25 UJ	25 UJ	5.0 U	50 U
2-Chloroethyl Vinyl Ether in ug/L			25 UJ	25 UJ	5.0 U	50 U
2-Chlorotoluene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
2-Hexanone in ug/L			25 UJ	25 UJ	5.0 U	50 U
4-Chlorotoluene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
4-Methyl-2-pentanone in ug/L	11,000	24,000	25 UJ	25 UJ	5.0 U	50 U
Acetone in ug/L			25 UJ	25 UJ	5.0 U	50 U
Acrolein in ug/L	20	20	250 UJ	250 UJ	50 U	500 U
Acrylonitrile in ug/L	5	5	5.0 UJ	5.0 UJ	1.0 U	10 U
Benzene in ug/L	2.4	24	5.0 UJ	5.0 UJ	1.0 U	10 U
Bromobenzene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
Bromochloromethane in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
Bromodichloromethane in ug/L	0.5	0.9	5.0 UJ	5.0 UJ	1.0 U	10 U
Bromoethane in ug/L			10 UJ	10 UJ	2.0 U	20 U
Bromoform in ug/L	140	140	5.0 UJ	5.0 UJ	1.0 U	10 U
Bromomethane in ug/L	13	28	5.0 UJ	5.0 UJ	1.0 U	10 U
Carbon disulfide in ug/L	400	870	5.0 UJ	5.0 UJ	1.0 U	10 U
Carbon tetrachloride in ug/L	0.5	1.6	5.0 UJ	5.0 UJ	1.0 U	10 U
Chlorobenzene in ug/L	100	220	5.0 UJ	5.0 UJ	1.0 U	10 U
Chloroethane in ug/L	12	120	5.0 UJ	5.0 UJ	1.0 U	10 U
Chloroform in ug/L	1.2	12	5.0 UJ	5.0 UJ	1.0 U	10 U
Chloromethane in ug/L	5.2	52	5.0 UJ	5.0 UJ	1.0 U	10 U
cis-1,2-Dichloroethene (DCE) in ug/L	160	350	5.0 UJ	5.0 UJ	1.0 U	10 U
cis-1,3-Dichloropropene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
Dibromochloromethane in ug/L	0.5	2.2	5.0 UJ	5.0 UJ	1.0 U	10 U
Dibromomethane in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
Ethylbenzene in ug/L	2,100	2,100	5.0 UJ	5.0 UJ	1.0 U	10 U
Hexachlorobutadiene in ug/L	0.2	0.2	25 UJ	25 UJ	5.0 U	50 U
Isopropylbenzene in ug/L	720	1,600	5.0 UJ	5.0 UJ	1.0 U	10 U
Methylene chloride in ug/L	94	590	10 UJ	10 UJ	2.0 U	20 U
Methyliodide in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
n-Butylbenzene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
n-Propylbenzene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
p-Isopropyltoluene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U

Table 7-5C - Groundwater VOC, SVOC, and PCB Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-12S 07/26/04 Pre-RI	EMW-16S 07/26/04 Pre-RI	EMW-18S 07/26/04 Pre-RI	MG-MW01 07/27/04 Pre-RI
sec-Butylbenzene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
Styrene in ug/L	78	780	5.0 UJ	5.0 UJ	1.0 U	10 U
tert-Butylbenzene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
Tetrachloroethene (PCE) in ug/L	3.3	3.3	5.0 UJ	5.0 UJ	1.0 U	10 U
Toluene in ug/L	7,300	7,300	5.0 UJ	5.0 UJ	1.0 U	10 U
trans-1,2-Dichloroethene in ug/L	130	290	5.0 UJ	5.0 UJ	1.0 U	10 U
trans-1,3-Dichloropropene in ug/L			5.0 UJ	5.0 UJ	1.0 U	10 U
Trichloroethene (TCE) in ug/L	1.6	8.4	5.0 UJ	5.0 UJ	1.0 U	10 U
Trichlorofluoromethane in ug/L	120	260	5.0 UJ	5.0 UJ	1.0 U	10 U
Vinyl acetate in ug/L	7,800	17,000	25 UJ	25 UJ	5.0 U	50 U
Vinyl chloride in ug/L	0.5	2.4	5.0 UJ	5.0 UJ	1.0 U	10 U
o-Xylene in ug/L	440	960	5.0 UJ	5.0 UJ	1.0 U	10 U
Xylenes (total) in ug/L			5.00 UJ	5.00 UJ	1.00 U	10 U
Naphthalene in ug/L	83	83	25 UJ	450 J	5.0 U	50 U
Polychlorinated Biphenyls (PCBs)						
Aroclor 1016 in ug/L			0.10 UJ	0.10 UJ	0.10 U	0.10 UJ
Aroclor 1221 in ug/L			0.10 UJ	0.10 UJ	0.10 U	0.10 UJ
Aroclor 1232 in ug/L			0.10 UJ	0.10 UJ	0.10 U	0.10 UJ
Aroclor 1242 in ug/L			0.10 UJ	0.10 UJ	0.10 U	0.10 UJ
Aroclor 1248 in ug/L			0.10 UJ	0.14 J	0.10 U	0.10 UJ
Aroclor 1254 in ug/L			0.10 UJ	0.10 UJ	0.10 U	0.10 UJ
Aroclor 1260 in ug/L			0.10 UJ	0.10 UJ	0.10 U	0.10 UJ
Total PCBs in ug/L	0.1	0.1	0.35 UJ	0.44 J	0.35 U	0.35 UJ

Table 7-5D - Soil Vapor Chemistry Data for Million Gallon Tanks Subarea

GP West RI/FS 070188

Chemical Name	Unrestricted Soil Gas Screening Level	Industrial Soil Gas Screening Level	MG-VP01 02/03/2011 RI	MG-VP02 02/03/2011 RI	MG-VP03 02/03/2011 RI	MG-VP04 02/08/2011 RI
Extractable Petroleum Hydrocarbons						
Aliphatics C10-C12 in ug/m3	1,360	2,975	100 U	100 U	110 U	2,000 U
Aliphatics C5-C6 in ug/m3	27,200	59,500	47 U	48 U	50 U	9,300
Aliphatics C6-C8 in ug/m3	27,200	59,500	59 U	61 U	64 U	6,400
Aliphatics C8-C10 in ug/m3	1,360	2,975	84 U	87 U	90 U	3,000
Aromatics C10-C12 in ug/m3	85	85	79 U	82 U	85 U	1,600 U
Aromatics C8-C10 in ug/m3	1,820	3,990	71 U	74 U	76 U	1,400 U
Volatile Organic Compounds (VOCs)						
Naphthalene in ug/m3	16	30	15 U	16 U	16 U	300 U

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW01 (5-6.5 ft) 7/14/04 Pre-RI	BC-MW01 (10-11.5 ft) 7/14/04 Pre-RI	BC-MW01 (15-16.5 ft) 7/14/04 Pre-RI	BC-MW02 (2-4 ft) 9/22/09 RI	BC-MW02 (8-10 ft) 9/22/09 RI	BC-MW02 (12-14 ft) 9/22/09 RI	BC-MW02 (17-19 ft) 9/22/09 RI	BC-MW02 (21-22 ft) 9/22/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			300	1,800	6.3	27 U	360	320	950	31 U
Oil Range Hydrocarbons in mg/kg			300	1,300		110 U	840	450	2,000	130 U
Bunker C in mg/kg	3,100	10,000	1,600	8,600	36					
Total TPHs in mg/kg	3,100	10,000	1,600	8,600	36	ND	1,200	770	2,950	ND
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg							3 UJ		35 J	
Aliphatics C12-C16 (EPH) in mg/kg							12 J		58 J	
Aliphatics C16-C21 (EPH) in mg/kg							38 J		120 J	
Aliphatics C21-C34 (EPH) in mg/kg							320 J		1,600 J	
Aliphatics C8-C10 (EPH) in mg/kg							3 UJ		20 J	
Aromatics C10-C12 (EPH) in mg/kg							3 UJ		28 UJ	
Aromatics C12-C16 (EPH) in mg/kg							3 UJ		28 UJ	
Aromatics C16-C21 (EPH) in mg/kg							20 J		240 J	
Aromatics C21-C34 (EPH) in mg/kg							150 J		2,100 J	
Aromatics C8-C10 (EPH) in mg/kg							3 UJ		28 UJ	
Heavy Metals										
Arsenic in mg/kg	7	7	10 U	5 U						
Cadmium in mg/kg	1	1	0.6 U	0.2 U						
Chromium (Total) in mg/kg	260	260	48.0	27.4						
Copper in mg/kg	36	36	42.4 J	20.8 J						
Lead in mg/kg	81	81	7	8						
Mercury in mg/kg	0.1	0.1	0.05 J	0.05 U						
Nickel in mg/kg	48	48	47	26						
Zinc in mg/kg	85	85	75	41.9						
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg				0.037 U						
Aroclor 1221 in mg/kg				0.037 U						
Aroclor 1232 in mg/kg				0.037 U						
Aroclor 1242 in mg/kg				0.037 U						
Aroclor 1248 in mg/kg				0.037 U						
Aroclor 1254 in mg/kg				0.037 U						
Aroclor 1260 in mg/kg				0.037 U						
Total PCBs in mg/kg	1	10		0.13 U						

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW01 (5-6.5 ft) 7/14/04 Pre-RI	BC-MW01 (10-11.5 ft) 7/14/04 Pre-RI	BC-MW01 (15-16.5 ft) 7/14/04 Pre-RI	BC-MW02 (2-4 ft) 9/22/09 RI	BC-MW02 (8-10 ft) 9/22/09 RI	BC-MW02 (12-14 ft) 9/22/09 RI	BC-MW02 (17-19 ft) 9/22/09 RI	BC-MW02 (21-22 ft) 9/22/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		0.58		0.003 J	0.0086	0.22	0.8	0.25
Acenaphthylene in mg/kg				0.055 U		0.0039 J	0.0058	0.0061	0.038	0.0012 J
Anthracene in mg/kg	3.5	3.5		0.47		0.0092	0.018	0.096	0.38	0.023
Benzo(g,h,i)perylene in mg/kg				0.055 U		0.035	0.061	0.11	0.79	0.0017 J
Dibenzofuran in mg/kg	80	3,500		0.25		0.0098	0.012	0.075	0.1	0.043
Fluoranthene in mg/kg	2.6	2.6		0.25		0.07	0.14	0.31	2.6	0.029
Fluorene in mg/kg	0.37	0.37		0.93		0.0029 J	0.013	0.14	0.23	0.21
Phenanthrene in mg/kg				0.32		0.061	0.096	0.3	0.78	0.23
Pyrene in mg/kg	16	16		0.69		0.043 J	0.12 J	0.37 J	1.9 J	0.017 J
1-Methylnaphthalene in mg/kg	35	4,500		3.2						
2-Methylnaphthalene in mg/kg	320	14,000		0.56		0.014	0.061	0.089	0.35	0.038
Naphthalene in mg/kg	1.6	1.6		0.13		0.017	0.029	0.12	0.96	0.089
Total Naphthalenes in mg/kg				3.89		0.031	0.09	0.209	1.31	0.127
Benz(a)anthracene in mg/kg	0.12	0.12		0.23		0.023	0.052	0.14	1.4	0.0016 J
Benzo(a)pyrene in mg/kg	0.14	0.31		0.15		0.023	0.049	0.14	1.4	0.00093 J
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.055 U		0.044	0.084	0.18	1.7	0.0015 J
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.055 U		0.012	0.016	0.06	0.68	0.0048 U
Chrysene in mg/kg	0.13	0.13		0.42		0.043	0.1	0.17	1.6	0.0018 J
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.055 U		0.0083	0.018	0.033	0.27	0.0048 U
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.055 U		0.028	0.041	0.11	0.98	0.001 J
Total cPAHs TEQ in mg/kg	0.14	0.31		0.188		0.035	0.0711	0.194	1.92	0.00184
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11	9.68	10.05	8.61					

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW03 (4-5 ft) 9/22/09 RI	BC-MW03 (7.5-9.5 ft) 9/22/09 RI	BC-MW03 (13-15 ft) 9/22/09 RI	BC-MW03 (18.5-19.5 ft) 9/22/09 RI	BC-MW04 (3-4 ft) 12/17/10 RI	BC-MW04 FD (6-7 ft) 12/17/10 RI	BC-MW04 (6-7 ft) 12/17/10 RI	BC-MW04 (9-10 ft) 12/17/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			46	42	30 U	31 U	53	710	800	380
Oil Range Hydrocarbons in mg/kg			140	140	120 U	130 U	360	4,600	5,300	5,200
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	186	182	ND	ND	413 J	5,310 J	6,100 J	5,580 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW03 (4-5 ft) 9/22/09 RI	BC-MW03 (7.5-9.5 ft) 9/22/09 RI	BC-MW03 (13-15 ft) 9/22/09 RI	BC-MW03 (18.5-19.5 ft) 9/22/09 RI	BC-MW04 (3-4 ft) 12/17/10 RI	BC-MW04 FD (6-7 ft) 12/17/10 RI	BC-MW04 (6-7 ft) 12/17/10 RI	BC-MW04 (9-10 ft) 12/17/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.036	0.023 J	0.062	0.008		0.06	0.061	
Acenaphthylene in mg/kg			0.042	0.034 J	0.005 U	0.0048 U		0.061	0.059	
Anthracene in mg/kg	3.5	3.5	0.06	0.045 J	0.0082	0.00064 J		0.11	0.14	
Benzo(g,h,i)perylene in mg/kg			0.17	0.11	0.00098 J	0.0016 J		0.11	0.11	
Dibenzofuran in mg/kg	80	3,500	0.06	0.038 J	0.007	0.00077 J		0.11	0.11	
Fluoranthene in mg/kg	2.6	2.6	0.37	0.27 J	0.026	0.0015 J		0.29	0.34	
Fluorene in mg/kg	0.37	0.37	0.062	0.073 J	0.039	0.0018 J		0.11	0.13	
Phenanthrene in mg/kg			0.41	0.39 J	0.021	0.0032 J		1	1.2	
Pyrene in mg/kg	16	16	0.34	0.3 J	0.015 J	0.0015 J		0.36	0.42	
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.11	0.1 J	0.0022 J	0.0021 J		0.48	0.52	
Naphthalene in mg/kg	1.6	1.6	0.41	0.2	0.0036 J	0.0048 U		0.54	0.51	
Total Naphthalenes in mg/kg			0.52	0.3 J	0.0058 J	0.0045 J		1.02	1.03	
Benz(a)anthracene in mg/kg	0.12	0.12	0.12	0.092 J	0.0025 J	0.0048 U		0.074	0.091	
Benzo(a)pyrene in mg/kg	0.14	0.31	0.16	0.13 J	0.005 U	0.0048 U		0.067	0.066	
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.21	0.14 J	0.0014 J	0.0048 U		0.094	0.1	
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.065	0.042 J	0.005 U	0.0048 U		0.024 J	0.019 J	
Chrysene in mg/kg	0.13	0.13	0.2	0.15 J	0.0024 J	0.00092 J		0.15	0.16	
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.021	0.017	0.005 U	0.0048 U		0.051	0.053	
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.13	0.096 J	0.005 U	0.0048 U		0.058	0.053	
Total cPAHs TEQ in mg/kg	0.14	0.31	0.217	0.17	0.00366	0.00361		0.0986	0.0992	
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW04 (11-12 ft) 12/17/10 RI	BC-MW04 (15-16 ft) 12/17/10 RI	BC-MW04 (18-19 ft) 12/17/10 RI	BC-MW05 (3-4 ft) 12/17/10 RI	BC-MW05 (7-8 ft) 12/17/10 RI	BC-MW05 (9-10 ft) 12/17/10 RI	BC-MW05 (12-13 ft) 12/17/10 RI	BC-MW05 (15-16 ft) 12/17/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			420	38 UJ	7.0 UJ	66	5.4 UJ	6.5 UJ	24 UJ	340
Oil Range Hydrocarbons in mg/kg			1,900	85 UJ	24 UJ	340	14 UJ	25 UJ	81 UJ	720
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	2,320 J	123 J	31.0 J	406 J	19.4 J	31.5 J	105 J	1,060 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW04 (11-12 ft) 12/17/10 RI	BC-MW04 (15-16 ft) 12/17/10 RI	BC-MW04 (18-19 ft) 12/17/10 RI	BC-MW05 (3-4 ft) 12/17/10 RI	BC-MW05 (7-8 ft) 12/17/10 RI	BC-MW05 (9-10 ft) 12/17/10 RI	BC-MW05 (12-13 ft) 12/17/10 RI	BC-MW05 (15-16 ft) 12/17/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		0.016			0.0035 U			0.04
Acenaphthylene in mg/kg				0.0051			0.0035 U			0.0095
Anthracene in mg/kg	3.5	3.5		0.018			0.0035 U			0.025
Benzo(g,h,i)perylene in mg/kg				0.012			0.0035 U			0.081
Dibenzofuran in mg/kg	80	3,500		0.0097			0.001 J			0.019
Fluoranthene in mg/kg	2.6	2.6		0.062			0.0035 U			0.19
Fluorene in mg/kg	0.37	0.37		0.016			0.0035 U			0.025
Phenanthrene in mg/kg				0.058			0.0035 U			0.1
Pyrene in mg/kg	16	16		0.065			0.0035 U			0.2
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000		0.014			0.00068 J			0.042
Naphthalene in mg/kg	1.6	1.6		0.066			0.003 UJ			0.13
Total Naphthalenes in mg/kg				0.08			0.00368 J			0.172
Benz(a)anthracene in mg/kg	0.12	0.12		0.015			0.0035 U			0.06
Benzo(a)pyrene in mg/kg	0.14	0.31		0.012			0.0035 U			0.086
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.015			0.0035 U			0.081
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.0069			0.0035 U			0.031
Chrysene in mg/kg	0.13	0.13		0.015			0.0035 U			0.097
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.0017 UJ			0.0035 U			0.02
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.0088			0.0035 U			0.053
Total cPAHs TEQ in mg/kg	0.14	0.31		0.0169			0.00264 U			0.111
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW05 (18-19 ft) 12/17/10 RI	BC-SB01 (0-2 ft) 7/21/04 Pre-RI	BC-SB01 (2-2.8 ft) 7/21/04 Pre-RI	BC-SB02 (4-8 ft) 7/21/04 Pre-RI	BC-SB02 (8-12 ft) 7/21/04 Pre-RI	BC-SB02 (12-16 ft) 7/21/04 Pre-RI	BC-SB03 (4-5 ft) 9/22/09 RI	BC-SB03 (8.5-9.5 ft) 9/22/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			6.5 UJ						210	64
Oil Range Hydrocarbons in mg/kg			19 UJ						2,100	220
Bunker C in mg/kg	3,100	10,000		97,000	88,000	26,000	30,000	310		
Total TPHs in mg/kg	3,100	10,000	25.5 J	97,000	88,000	26,000	30,000	310	2,310	284
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7		10 U	10 U	10 U	6 U			
Cadmium in mg/kg	1	1		0.6 U	0.6 U	0.6 U	0.2 U			
Chromium (Total) in mg/kg	260	260		21.0	41.0	43.0	35.1			
Copper in mg/kg	36	36		60.5	43.5	301	35.0			
Lead in mg/kg	81	81		76 J	33 J	62 J	5 J			
Mercury in mg/kg	0.1	0.1		0.05 U	0.07	0.10	0.06 U			
Nickel in mg/kg	48	48		30	43	43	36			
Zinc in mg/kg	85	85		113	157	160	51.6			
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg					0.041 U		0.041 U			
Aroclor 1221 in mg/kg					0.041 U		0.041 U			
Aroclor 1232 in mg/kg					0.041 U		0.041 U			
Aroclor 1242 in mg/kg					0.041 U		0.041 U			
Aroclor 1248 in mg/kg					0.041 U		0.041 U			
Aroclor 1254 in mg/kg					0.041 U		0.041 U			
Aroclor 1260 in mg/kg					0.041 U		0.041 U			
Total PCBs in mg/kg	1	10			0.144 U		0.144 U			

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-MW05 (18-19 ft) 12/17/10 RI	BC-SB01 (0-2 ft) 7/21/04 Pre-RI	BC-SB01 (2-2.8 ft) 7/21/04 Pre-RI	BC-SB02 (4-8 ft) 7/21/04 Pre-RI	BC-SB02 (8-12 ft) 7/21/04 Pre-RI	BC-SB02 (12-16 ft) 7/21/04 Pre-RI	BC-SB03 (4-5 ft) 9/22/09 RI	BC-SB03 (8.5-9.5 ft) 9/22/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26			0.24 U		1.3		0.02	0.036
Acenaphthylene in mg/kg					0.24 U		0.25 U		0.016	0.019
Anthracene in mg/kg	3.5	3.5			0.24 U		1.7		0.029	0.022
Benzo(g,h,i)perylene in mg/kg					0.24 U		0.25 U		0.14	0.027
Dibenzofuran in mg/kg	80	3,500							0.015	0.039
Fluoranthene in mg/kg	2.6	2.6			0.24 U		0.52		0.14	0.14
Fluorene in mg/kg	0.37	0.37			0.3		1.9		0.028	0.032
Phenanthrene in mg/kg					0.5		6.9		0.18	0.16
Pyrene in mg/kg	16	16			0.24 U		3.9		0.14 J	0.13
1-Methylnaphthalene in mg/kg	35	4,500			2.6		16			
2-Methylnaphthalene in mg/kg	320	14,000			2.3		16		0.13	0.035
Naphthalene in mg/kg	1.6	1.6			0.83		2.4		0.08	0.15
Total Naphthalenes in mg/kg					5.73		34.4		0.21	0.185
Benz(a)anthracene in mg/kg	0.12	0.12			0.24 U		1.1		0.15	0.022
Benzo(a)pyrene in mg/kg	0.14	0.31			0.24 U		0.41		0.16	0.022
Benzo(b)fluoranthene in mg/kg	0.38	0.38			0.24 U		0.25 U		0.19 J	0.033
Benzo(k)fluoranthene in mg/kg	0.38	0.38			0.24 U		0.25 U		0.0048 UJ	0.012
Chrysene in mg/kg	0.13	0.13			0.24 U		1.6		0.38	0.035
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58			0.24 U		0.25 U		0.065	0.0021 J
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1			0.24 U		0.25 U		0.07	0.017
Total cPAHs TEQ in mg/kg	0.14	0.31			ND		0.586		0.212	0.031
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11		7.94	8.45	8.28	8.84	8.66		

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB03 (11.5-12.5 ft) 9/22/09 RI	BC-SB03 (14-15 ft) 9/22/09 RI	BC-SB04 (1-2 ft) 9/22/09 RI	BC-SB04 (7.5-8.5 ft) 9/22/09 RI	BC-SB04 (10.5-11.5 ft) 9/22/09 RI	BC-SB04 (14-15 ft) 9/22/09 RI	BC-SB05 (7.5-8.5 ft) 9/22/09 RI	BC-SB05 (10.5-11.5 ft) 9/22/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			32 U	35 U	26 U	32 U	30 U	33 U	32 U	33 U
Oil Range Hydrocarbons in mg/kg			11 J	47 J	6.3 J	14 J	5.3 J	39 J	87 J	9.1 J
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	27 J	64.5 J	19.3 J	30 J	20.3 J	55.5 J	103 J	25.6 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB03 (11.5-12.5 ft) 9/22/09 RI	BC-SB03 (14-15 ft) 9/22/09 RI	BC-SB04 (1-2 ft) 9/22/09 RI	BC-SB04 (7.5-8.5 ft) 9/22/09 RI	BC-SB04 (10.5-11.5 ft) 9/22/09 RI	BC-SB04 (14-15 ft) 9/22/09 RI	BC-SB05 (7.5-8.5 ft) 9/22/09 RI	BC-SB05 (10.5-11.5 ft) 9/22/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.0029 J	0.017	0.00075 J	0.0032 J	0.11	0.0048 J	0.015	0.0045 J
Acenaphthylene in mg/kg			0.003 J	0.016	0.005 U	0.0025 J	0.00083 J	0.0077	0.072	0.0049 U
Anthracene in mg/kg	3.5	3.5	0.0038 J	0.027	0.005 U	0.0024 J	0.00057 J	0.0091	0.056	0.0049 U
Benzo(g,h,i)perylene in mg/kg			0.0048 J	0.028	0.005 U	0.022	0.0016 J	0.012	0.52	0.0029 J
Dibenzofuran in mg/kg	80	3,500	5 U	0.034	5 U	5 U	0.005 U	5.9 U	0.019	4.9 U
Fluoranthene in mg/kg	2.6	2.6	0.026	0.084	0.0011 J	0.039	0.0035 J	0.033	0.93	0.0029 J
Fluorene in mg/kg	0.37	0.37	0.0049 J	0.026	0.005 U	0.0018 J	0.0025 J	0.008	0.048	0.0022 J
Phenanthrene in mg/kg			0.017	0.1	5 U	0.028	5 U	0.038	0.57	6.6 U
Pyrene in mg/kg	16	16	0.025	0.085	5 U	0.03	5 U	0.032	0.91	4.9 U
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.0079	0.043	5 U	5 U	5 U	0.012	0.032	5 U
Naphthalene in mg/kg	1.6	1.6	0.022	0.12	5 U	0.0082 U	0.014	0.045	0.053	0.0093
Total Naphthalenes in mg/kg			0.0299	0.163	ND	ND	2.51	0.057	0.085	2.5093
Benz(a)anthracene in mg/kg	0.12	0.12	0.0074	0.026	0.005 U	0.011	0.0017 J	0.0087	0.39	0.0011 J
Benzo(a)pyrene in mg/kg	0.14	0.31	0.0041 J	0.03	0.005 U	0.017	0.0013 J	0.0096	0.63	0.001 J
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.0058	0.034	0.005 U	0.027	0.0017 J	0.013	0.77	0.0019 J
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.0021 J	0.014	0.005 U	0.0093	0.005 U	0.0044 J	0.27	0.0049 U
Chrysene in mg/kg	0.13	0.13	0.0072	0.029	0.005 U	0.021	0.0017 J	0.012	0.59	0.0027 J
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.005 U	0.0036 J	0.005 U	0.0024 J	0.005 U	0.0012 J	0.089	0.0049 U
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.0027 J	0.022	0.005 U	0.018	0.0011 J	0.0088	0.51	0.001 J
Total cPAHs TEQ in mg/kg	0.14	0.31	0.00622	0.0403	ND	0.024	0.00227	0.0133	0.839	0.00192
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB05 (14-15 ft) 9/22/09 RI	BC-SB06 (4-5 ft) 9/22/09 RI	BC-SB06 (9-10 ft) 9/22/09 RI	BC-SB06 (12-14 ft) 9/22/09 RI	BC-SB06 (17.5-18.5 ft) 9/22/09 RI	BC-SB06 (19-20 ft) 9/22/09 RI	BC-SB07 (4-5 ft) 9/22/09 RI	BC-SB07 (7.5-9.5 ft) 9/22/09 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			35 U	29 U	42 U	37 U	580	31 U	350	71
Oil Range Hydrocarbons in mg/kg			41 J	120 U	170 U	150 U	1,100	130 U	4,300	190
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	58.5 J	ND	ND	ND	1,680	ND	4,650	261
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg									4.3 UJ	
Aliphatics C12-C16 (EPH) in mg/kg									12 J	
Aliphatics C16-C21 (EPH) in mg/kg									20 J	
Aliphatics C21-C34 (EPH) in mg/kg									610 J	
Aliphatics C8-C10 (EPH) in mg/kg									4.3 UJ	
Aromatics C10-C12 (EPH) in mg/kg									11 UJ	
Aromatics C12-C16 (EPH) in mg/kg									11 UJ	
Aromatics C16-C21 (EPH) in mg/kg									33 J	
Aromatics C21-C34 (EPH) in mg/kg									980 J	
Aromatics C8-C10 (EPH) in mg/kg									11 UJ	
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB05 (14-15 ft) 9/22/09 RI	BC-SB06 (4-5 ft) 9/22/09 RI	BC-SB06 (9-10 ft) 9/22/09 RI	BC-SB06 (12-14 ft) 9/22/09 RI	BC-SB06 (17.5-18.5 ft) 9/22/09 RI	BC-SB06 (19-20 ft) 9/22/09 RI	BC-SB07 (4-5 ft) 9/22/09 RI	BC-SB07 (7.5-9.5 ft) 9/22/09 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.0069	0.00061 J	0.005 U	0.0047 U	0.16	0.0068	0.097	0.25
Acenaphthylene in mg/kg			0.012	0.0008 J	0.005 U	0.0047 U	0.047	0.005 U	0.012	0.029
Anthracene in mg/kg	3.5	3.5	0.017	0.0026 J	0.005 U	0.0047 U	0.11	0.00063 J	0.083	0.29
Benzo(g,h,i)perylene in mg/kg			0.029	0.0071	0.0024 J	0.011	0.12	0.005 U	0.17	0.062 J
Dibenzofuran in mg/kg	80	3,500	0.013	0.001 J	0.005 U	0.00093 J	0.046	0.00093 J	0.074	0.22
Fluoranthene in mg/kg	2.6	2.6	0.089	0.0042 J	0.0018 J	0.0024 J	0.21	0.0013 J	0.5	0.99
Fluorene in mg/kg	0.37	0.37	0.015	0.0048 U	0.005 U	0.0047 U	0.094	0.005 U	0.12	0.24
Phenanthrene in mg/kg			0.078	0.014	0.0014 J	0.0033 J	0.55	0.0026 J	0.58	1.1
Pyrene in mg/kg	16	16	0.075	0.0058 J	0.0014 J	0.0028 J	0.4 J	0.0016 J	0.39 J	0.7 J
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.016	0.014	0.00082 J	0.0026 J	0.08	0.0011 J	0.14	0.21
Naphthalene in mg/kg	1.6	1.6	0.081	0.0042 J	0.00086 J	0.0031 J	0.31	0.0013 J	0.098	0.38
Total Naphthalenes in mg/kg			0.097	0.0182	0.00168 J	0.0057 J	0.39	0.0024 J	0.238	0.59
Benz(a)anthracene in mg/kg	0.12	0.12	0.03	0.0031 J	0.0013 J	0.0015 J	0.18	0.00086 J	0.19	0.2
Benzo(a)pyrene in mg/kg	0.14	0.31	0.032	0.0023 J	0.0014 J	0.0012 J	0.18	0.005 U	0.21	0.1 J
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.038	0.0023 J	0.0018 J	0.0017 J	0.14	0.005 U	0.25	0.17
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.014	0.0048 U	0.005 U	0.0047 U	0.045	0.005 U	0.097	0.056 J
Chrysene in mg/kg	0.13	0.13	0.031	0.0045 J	0.0015 J	0.0027 J	0.29	0.005 U	0.4	0.23
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.0043 J	0.0013 J	0.005 U	0.0012 J	0.039	0.005 U	0.069	0.019
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.023	0.0018 J	0.0013 J	0.0013 J	0.088	0.005 U	0.13	0.064 J
Total cPAHs TEQ in mg/kg	0.14	0.31	0.0432	0.00344	0.00236	0.00203	0.232	0.00361	0.288	0.153
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB07 (13-14 ft) 9/22/09 RI	BC-SB07 (16-17 ft) 9/22/09 RI	BC-SB08 (4-5 ft) 9/22/09 RI	BC-SB08 (9-10 ft) 9/22/09 RI	BC-SB08 (13-14 ft) 9/22/09 RI	BC-SB08 (15.5-16.5 ft) 9/22/09 RI	BC-SB08 (18-19 ft) 9/22/09 RI	BC-SB09 (1-2 ft) 3/25/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			33	41	27 U	32 U	31 U	2,600	30 U	240
Oil Range Hydrocarbons in mg/kg			130 U	130 U	110 U	130 U	130 U	3,000	120 U	4,000
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	98	106	ND	ND	ND	5,600	ND	4,240
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg								150 J		
Aliphatics C12-C16 (EPH) in mg/kg								430 J		
Aliphatics C16-C21 (EPH) in mg/kg								420 J		
Aliphatics C21-C34 (EPH) in mg/kg								1,400 J		
Aliphatics C8-C10 (EPH) in mg/kg								24 UJ		
Aromatics C10-C12 (EPH) in mg/kg								24 UJ		
Aromatics C12-C16 (EPH) in mg/kg								100 J		
Aromatics C16-C21 (EPH) in mg/kg								500 J		
Aromatics C21-C34 (EPH) in mg/kg								1,300 J		
Aromatics C8-C10 (EPH) in mg/kg								24 UJ		
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB07 (13-14 ft) 9/22/09 RI	BC-SB07 (16-17 ft) 9/22/09 RI	BC-SB08 (4-5 ft) 9/22/09 RI	BC-SB08 (9-10 ft) 9/22/09 RI	BC-SB08 (13-14 ft) 9/22/09 RI	BC-SB08 (15.5-16.5 ft) 9/22/09 RI	BC-SB08 (18-19 ft) 9/22/09 RI	BC-SB09 (1-2 ft) 3/25/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	1.2	0.39	0.00077 J	0.005 U	0.0048 U	0.054	0.0011 J	0.0044 J
Acenaphthylene in mg/kg			0.0097	0.0089	0.0048 U	0.00085 J	0.0048 U	0.032	0.005 U	0.0048 U
Anthracene in mg/kg	3.5	3.5	0.14	0.11	0.00084 J	0.00068 J	0.0048 U	0.1	0.00097 J	0.004 J
Benzo(g,h,i)perylene in mg/kg			0.034	0.03	0.0011 J	0.022	0.0014 J	0.04	0.005 U	0.12
Dibenzofuran in mg/kg	80	3,500	0.69	0.16	0.0013 J	0.0011 J	0.00067 J	0.016	0.0017 J	0.011
Fluoranthene in mg/kg	2.6	2.6	0.4	0.36	0.0094	0.0085	0.0023 J	0.12	0.0022 J	0.034
Fluorene in mg/kg	0.37	0.37	0.87	0.27	0.0048 U	0.005 U	0.0048 U	0.027	0.0012 J	0.0034 J
Phenanthrene in mg/kg			0.87	0.33	0.0073	0.0051	0.0029 J	0.089	0.0031 J	0.11
Pyrene in mg/kg	16	16	0.26 J	0.23 J	0.0041 J	0.0071	0.0015 J	0.26	0.0022 J	0.12
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.78	0.12	0.0017 J	0.0021 J	0.0013 J	0.058	0.0018 J	0.063
Naphthalene in mg/kg	1.6	1.6	0.92	0.37	0.0033 J	0.0032 J	0.0033 J	0.037	0.0025 J	0.02
Total Naphthalenes in mg/kg			1.7	0.49	0.005 J	0.0053 J	0.0046 J	0.095	0.0043 J	0.083
Benz(a)anthracene in mg/kg	0.12	0.12	0.15	0.063	0.0019 J	0.005 J	0.00072 J	0.087	0.001 J	0.038
Benzo(a)pyrene in mg/kg	0.14	0.31	0.062	0.033	0.00083 J	0.012	0.0048 U	0.045	0.005 U	0.067
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.11	0.057	0.0026 J	0.017	0.0012 J	0.064	0.005 U	0.1
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.047	0.017	0.0048 U	0.0048 J	0.0048 U	0.015	0.005 U	0.011
Chrysene in mg/kg	0.13	0.13	0.2	0.08	0.0036 J	0.01	0.0013 J	0.22	0.00091 J	0.28
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.01	0.0061	0.0048 U	0.0042 J	0.0048 U	0.025	0.005 U	0.048
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.038	0.029	0.0048 U	0.015	0.0048 U	0.02	0.005 U	0.033
Total cPAHs TEQ in mg/kg	0.14	0.31	0.0995	0.051	0.00204	0.0167	0.00333	0.0683	0.00361	0.0928
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB09 (3-4 ft) 3/25/10 RI	BC-SB09 (5-6 ft) 3/25/10 RI	BC-SB09 (7-8 ft) 3/25/10 RI	BC-SB09 (9-10 ft) 3/25/10 RI	BC-SB09 FD (13-15 ft) 3/25/10 RI	BC-SB09 (13-15 ft) 3/25/10 RI	BC-SB09 (18-20 ft) 3/25/10 RI	BC-SB10 (5-6 ft) 3/25/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			5.5 U	11 U	5 U	3.6 U	10 U	9.5 U	3.9 U	6 U
Oil Range Hydrocarbons in mg/kg			16 J	70 J	6.6 J	5 J	120 J	83 J	12 J	21 J
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	21.5 J	81 J	11.6 J	8.6 J	130 J	92.5 J	15.9 J	27 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB09 (3-4 ft) 3/25/10 RI	BC-SB09 (5-6 ft) 3/25/10 RI	BC-SB09 (7-8 ft) 3/25/10 RI	BC-SB09 (9-10 ft) 3/25/10 RI	BC-SB09 FD (13-15 ft) 3/25/10 RI	BC-SB09 (13-15 ft) 3/25/10 RI	BC-SB09 (18-20 ft) 3/25/10 RI	BC-SB10 (5-6 ft) 3/25/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		0.005 U				0.0039 J		0.0048 U
Acenaphthylene in mg/kg				0.0022 J				0.0022 J		0.0048 U
Anthracene in mg/kg	3.5	3.5		0.0031 J				0.0035 J		0.0013 J
Benzo(g,h,i)perylene in mg/kg				0.026				0.01		0.01
Dibenzofuran in mg/kg	80	3,500		0.0062				0.0035 J		0.0014 J
Fluoranthene in mg/kg	2.6	2.6		0.017				0.012		0.011
Fluorene in mg/kg	0.37	0.37		0.005 U				0.0043 J		0.0048 U
Phenanthrene in mg/kg				0.02				0.017		0.0072
Pyrene in mg/kg	16	16		0.016				0.017		0.0097
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000		0.0065				0.01		0.015
Naphthalene in mg/kg	1.6	1.6		0.0058				0.021		0.0076
Total Naphthalenes in mg/kg				0.0123				0.031		0.0226
Benz(a)anthracene in mg/kg	0.12	0.12		0.0076				0.0043 J		0.0035 J
Benzo(a)pyrene in mg/kg	0.14	0.31		0.016				0.0054		0.0054
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.021				0.0082		0.014
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.0061				0.0018 J		0.0031 J
Chrysene in mg/kg	0.13	0.13		0.015				0.0049		0.0096
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.0043 J				0.0017 J		0.0013 J
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.021				0.0053		0.0081
Total cPAHs TEQ in mg/kg	0.14	0.31		0.0222				0.00758		0.0085
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB10 (9-10 ft) 3/25/10 RI	BC-SB10 (13-14 ft) 3/25/10 RI	BC-SB10 (15-16 ft) 3/25/10 RI	BC-SB10 (16-17 ft) 3/25/10 RI	BC-SB10 (18-19 ft) 3/25/10 RI	BC-SB11 FD (3-4 ft) 12/22/10 RI	BC-SB11 (3-4 ft) 12/22/10 RI	BC-SB11 (6-7 ft) 12/22/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			9.8 U	210	4.3 U	22 U	5 U	200	310	30 U
Oil Range Hydrocarbons in mg/kg			7 J	310	7.8 J	56 J	10 J	1,000 J	1,600 J	120 U
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	16.8 J	520	12.1 J	78 J	15 J	1,200 J	1,910 J	ND
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB10 (9-10 ft) 3/25/10 RI	BC-SB10 (13-14 ft) 3/25/10 RI	BC-SB10 (15-16 ft) 3/25/10 RI	BC-SB10 (16-17 ft) 3/25/10 RI	BC-SB10 (18-19 ft) 3/25/10 RI	BC-SB11 FD (3-4 ft) 12/22/10 RI	BC-SB11 (3-4 ft) 12/22/10 RI	BC-SB11 (6-7 ft) 12/22/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		0.043					0.0029 U	0.003 U
Acenaphthylene in mg/kg				0.011					0.0032	0.003 U
Anthracene in mg/kg	3.5	3.5		0.024					0.0047	0.003 U
Benzo(g,h,i)perylene in mg/kg				0.012					0.082	0.0027 J
Dibenzofuran in mg/kg	80	3,500		0.014					0.0034	0.003 U
Fluoranthene in mg/kg	2.6	2.6		0.03					0.034	0.0013 J
Fluorene in mg/kg	0.37	0.37		0.074					0.0018 J	0.003 U
Phenanthrene in mg/kg				0.16					0.026	0.0047
Pyrene in mg/kg	16	16		0.089					0.025	0.0027 J
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000		0.34					0.02	0.0092
Naphthalene in mg/kg	1.6	1.6		0.11					0.013	0.0059
Total Naphthalenes in mg/kg				0.45					0.033	0.0151
Benz(a)anthracene in mg/kg	0.12	0.12		0.017					0.0059	0.003 U
Benzo(a)pyrene in mg/kg	0.14	0.31		0.013					0.017	0.003 U
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.012					0.016	0.0013 J
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.0031 J					0.0029 U	0.003 U
Chrysene in mg/kg	0.13	0.13		0.044					0.0077	0.0018 J
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.0034 J					0.0095	0.003 U
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.0069					0.023	0.003 U
Total cPAHs TEQ in mg/kg	0.14	0.31		0.0177					0.0227	0.00225 J
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB11 (9-10 ft) 12/22/10 RI	BC-SB11 (12-13 ft) 12/22/10 RI	BC-SB11 (15-16 ft) 12/22/10 RI	BC-SB11 (18-19 ft) 12/22/10 RI	BC-SB12 (3-4 ft) 12/21/10 RI	BC-SB12 FD (6-7 ft) 12/21/10 RI	BC-SB12 (6-7 ft) 12/21/10 RI	BC-SB12 (9-10 ft) 12/21/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			4.2 UJ	3.8 UJ	2.4 UJ	2.1 UJ	4.1 UJ	4.1 UJ	5.4 UJ	3,800
Oil Range Hydrocarbons in mg/kg			8.6 UJ	6.6 UJ	6.0 UJ	120 U	22 UJ	13 UJ	15 UJ	1,500
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	12.8 J	10.4 J	8.4 J	62.1 J	26.1 J	17.1 J	20.4 J	5,300 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB11 (9-10 ft) 12/22/10 RI	BC-SB11 (12-13 ft) 12/22/10 RI	BC-SB11 (15-16 ft) 12/22/10 RI	BC-SB11 (18-19 ft) 12/22/10 RI	BC-SB12 (3-4 ft) 12/21/10 RI	BC-SB12 FD (6-7 ft) 12/21/10 RI	BC-SB12 (6-7 ft) 12/21/10 RI	BC-SB12 (9-10 ft) 12/21/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26								0.17
Acenaphthylene in mg/kg										0.027 U
Anthracene in mg/kg	3.5	3.5								0.085
Benzo(g,h,i)perylene in mg/kg										0.023
Dibenzofuran in mg/kg	80	3,500								0.08 U
Fluoranthene in mg/kg	2.6	2.6								0.25
Fluorene in mg/kg	0.37	0.37								0.12
Phenanthrene in mg/kg										0.17
Pyrene in mg/kg	16	16								0.23
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000								0.022
Naphthalene in mg/kg	1.6	1.6								0.041
Total Naphthalenes in mg/kg										0.063
Benz(a)anthracene in mg/kg	0.12	0.12								0.045
Benzo(a)pyrene in mg/kg	0.14	0.31								0.031
Benzo(b)fluoranthene in mg/kg	0.38	0.38								0.044
Benzo(k)fluoranthene in mg/kg	0.38	0.38								0.015
Chrysene in mg/kg	0.13	0.13								0.067
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58								0.0065
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1								0.016
Total cPAHs TEQ in mg/kg	0.14	0.31								0.0443
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB12 (12-13 ft) 12/21/10 RI	BC-SB12 (14-15 ft) 12/21/10 RI	BC-SB12 (16-17 ft) 12/21/10 RI	BC-SB13 (3-4 ft) 12/21/10 RI	BC-SB13 FD (6-7 ft) 12/21/10 RI	BC-SB13 (6-7 ft) 12/21/10 RI	BC-SB13 (9-10 ft) 12/21/10 RI	BC-SB13 (12-13 ft) 12/21/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			17 UJ	19 UJ	5.5 UJ	4.4 UJ	3.6 UJ	5.2 UJ	54	5.4 UJ
Oil Range Hydrocarbons in mg/kg			39 UJ	49 UJ	17 UJ	12 UJ	18 UJ	23 UJ	120 UJ	11 UJ
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	56.0 J	68.0 J	22.5 J	16.4 J	21.6 J	28.2 J	174 J	16.4 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB12 (12-13 ft) 12/21/10 RI	BC-SB12 (14-15 ft) 12/21/10 RI	BC-SB12 (16-17 ft) 12/21/10 RI	BC-SB13 (3-4 ft) 12/21/10 RI	BC-SB13 FD (6-7 ft) 12/21/10 RI	BC-SB13 (6-7 ft) 12/21/10 RI	BC-SB13 (9-10 ft) 12/21/10 RI	BC-SB13 (12-13 ft) 12/21/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26	0.019					0.0028 U	0.016	
Acenaphthylene in mg/kg			0.0031 U					0.0028 U	0.0023 J	
Anthracene in mg/kg	3.5	3.5	0.0047					0.0028 U	0.014	
Benzo(g,h,i)perylene in mg/kg			0.0049					0.0014 J	0.012	
Dibenzofuran in mg/kg	80	3,500	0.0043					0.0028 U	0.01	
Fluoranthene in mg/kg	2.6	2.6	0.017					0.0018 J	0.074	
Fluorene in mg/kg	0.37	0.37	0.012					0.0028 U	0.014	
Phenanthrene in mg/kg			0.018					0.0028 U	0.045	
Pyrene in mg/kg	16	16	0.015					0.0012 J	0.064	
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000	0.027					0.00061 J	0.035	
Naphthalene in mg/kg	1.6	1.6	0.048					0.0014 UJ	0.03	
Total Naphthalenes in mg/kg			0.075					0.00201 J	0.065	
Benz(a)anthracene in mg/kg	0.12	0.12	0.0033					0.0028 U	0.03	
Benzo(a)pyrene in mg/kg	0.14	0.31	0.0024 J					0.0028 U	0.022	
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.0041					0.0028 U	0.023	
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.003 U					0.0028 U	0.0068	
Chrysene in mg/kg	0.13	0.13	0.0032					0.0028 U	0.051	
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.003 U					0.0028 U	0.0037	
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.0021 J					0.0028 U	0.0073	
Total cPAHs TEQ in mg/kg	0.14	0.31	0.00368					0.00211 U	0.0296	
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB13 (14-15 ft) 12/21/10 RI	BC-SB13 (16-17 ft) 12/21/10 RI	BC-SB14 (2-3 ft) 12/22/10 RI	BC-SB14 (6.5-7.5 ft) 12/22/10 RI	BC-SB14 (8-9 ft) 12/22/10 RI	BC-SB14 (9-10 ft) 12/22/10 RI	BC-SB14 FD (12-13 ft) 12/22/10 RI	BC-SB14 (12-13 ft) 12/22/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			39	5.3 UJ	870	5,500	3,600	28 UJ	23 UJ	29 UJ
Oil Range Hydrocarbons in mg/kg			88 UJ	16 UJ	1,800	8,000	3,900	14 UJ	33 UJ	39 UJ
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	127 J	21.3 J	2,670 J	13,500 J	7,500 J	42.0 J	56.0 J	68.0 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg						120				
Aliphatics C12-C16 (EPH) in mg/kg						560				
Aliphatics C16-C21 (EPH) in mg/kg						770				
Aliphatics C21-C34 (EPH) in mg/kg						3,200				
Aliphatics C8-C10 (EPH) in mg/kg						13 U				
Aromatics C10-C12 (EPH) in mg/kg						49				
Aromatics C12-C16 (EPH) in mg/kg						450				
Aromatics C16-C21 (EPH) in mg/kg						1,400				
Aromatics C21-C34 (EPH) in mg/kg						3,000				
Aromatics C8-C10 (EPH) in mg/kg						67 U				
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB13 (14-15 ft) 12/21/10 RI	BC-SB13 (16-17 ft) 12/21/10 RI	BC-SB14 (2-3 ft) 12/22/10 RI	BC-SB14 (6.5-7.5 ft) 12/22/10 RI	BC-SB14 (8-9 ft) 12/22/10 RI	BC-SB14 (9-10 ft) 12/22/10 RI	BC-SB14 FD (12-13 ft) 12/22/10 RI	BC-SB14 (12-13 ft) 12/22/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26						0.082		0.01
Acenaphthylene in mg/kg								0.015 U		0.0037 U
Anthracene in mg/kg	3.5	3.5						0.064		0.014
Benzo(g,h,i)perylene in mg/kg								0.0078		0.0041
Dibenzofuran in mg/kg	80	3,500						0.039		0.0066
Fluoranthene in mg/kg	2.6	2.6						0.016		0.012
Fluorene in mg/kg	0.37	0.37						0.094		0.017
Phenanthrene in mg/kg								0.12		0.058
Pyrene in mg/kg	16	16						0.081		0.037
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000						0.68		0.16
Naphthalene in mg/kg	1.6	1.6						0.095		0.031
Total Naphthalenes in mg/kg								0.775		0.191
Benz(a)anthracene in mg/kg	0.12	0.12						0.014		0.01
Benzo(a)pyrene in mg/kg	0.14	0.31						0.005		0.0045
Benzo(b)fluoranthene in mg/kg	0.38	0.38						0.0057		0.0039
Benzo(k)fluoranthene in mg/kg	0.38	0.38						0.0031 U		0.0011 J
Chrysene in mg/kg	0.13	0.13						0.024		0.016
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58						0.0018 J		0.0011 J
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1						0.0015 J		0.0016 J
Total cPAHs TEQ in mg/kg	0.14	0.31						0.0077		0.00643
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB14 (15-16 ft) 12/22/10 RI	BC-SB14 (18-19 ft) 12/22/10 RI	BC-SB15 (2-3 ft) 12/23/10 RI	BC-SB15 FD (6.5-7.5 ft) 12/22/10 RI	BC-SB15 (6.5-7.5 ft) 12/23/10 RI	BC-SB15 (9-10 ft) 12/23/10 RI	BC-SB15 (12-13 ft) 12/23/10 RI	BC-SB15 (15-16 ft) 12/23/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			5.2 UJ	2.2 UJ	9.4 UJ	7.5 UJ	7.6 UJ	3.3 UJ	6.1 UJ	12 UJ
Oil Range Hydrocarbons in mg/kg			6.0 UJ	120 U	36 UJ	26 UJ	30 UJ	130 U	24 UJ	28 UJ
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	11.2 J	62.2 J	45.4 J	33.5 J	37.6 J	68.3 J	30.1 J	40.0 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB14 (15-16 ft) 12/22/10 RI	BC-SB14 (18-19 ft) 12/22/10 RI	BC-SB15 (2-3 ft) 12/23/10 RI	BC-SB15 FD (6.5-7.5 ft) 12/22/10 RI	BC-SB15 (6.5-7.5 ft) 12/23/10 RI	BC-SB15 (9-10 ft) 12/23/10 RI	BC-SB15 (12-13 ft) 12/23/10 RI	BC-SB15 (15-16 ft) 12/23/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26					0.0031 U	0.0019 J		
Acenaphthylene in mg/kg							0.0037	0.0032 U		
Anthracene in mg/kg	3.5	3.5					0.0069	0.0032 U		
Benzo(g,h,i)perylene in mg/kg							0.037	0.0025 J		
Dibenzofuran in mg/kg	80	3,500					0.0049	0.00081 J		
Fluoranthene in mg/kg	2.6	2.6					0.049	0.00099 J		
Fluorene in mg/kg	0.37	0.37					0.0012 J	0.0011 J		
Phenanthrene in mg/kg							0.029	0.0059		
Pyrene in mg/kg	16	16					0.043	0.0025 J		
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000					0.011	0.008		
Naphthalene in mg/kg	1.6	1.6					0.031	0.0058		
Total Naphthalenes in mg/kg							0.042	0.0138		
Benz(a)anthracene in mg/kg	0.12	0.12					0.021	0.0032 U		
Benzo(a)pyrene in mg/kg	0.14	0.31					0.031	0.0032 U		
Benzo(b)fluoranthene in mg/kg	0.38	0.38					0.04	0.0013 J		
Benzo(k)fluoranthene in mg/kg	0.38	0.38					0.013	0.0032 U		
Chrysene in mg/kg	0.13	0.13					0.032	0.0013 J		
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58					0.004	0.0032 U		
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1					0.031	0.0032 U		
Total cPAHs TEQ in mg/kg	0.14	0.31					0.0422	0.00238 J		
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB15 (18-19 ft) 12/23/10 RI	BC-SB16 (3-4 ft) 12/22/10 RI	BC-SB16 FD (6-7 ft) 12/22/10 RI	BC-SB16 (6-7 ft) 12/22/10 RI	BC-SB16 (9-10 ft) 12/22/10 RI	BC-SB16 (10-11 ft) 12/22/10 RI	BC-SB16 (12-13 ft) 12/22/10 RI	BC-SB16 (14-15 ft) 12/22/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			3.2 UJ	200 J	96	87	5.6 UJ	41 UJ	4.7 UJ	3.4 UJ
Oil Range Hydrocarbons in mg/kg			5.3 UJ	2,200	270	250	9.9 UJ	380	9.4 UJ	5.6 UJ
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	8.5 J	2,400 J	366 J	337 J	15.5 J	421 J	14.1 J	9.00 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB15 (18-19 ft) 12/23/10 RI	BC-SB16 (3-4 ft) 12/22/10 RI	BC-SB16 FD (6-7 ft) 12/22/10 RI	BC-SB16 (6-7 ft) 12/22/10 RI	BC-SB16 (9-10 ft) 12/22/10 RI	BC-SB16 (10-11 ft) 12/22/10 RI	BC-SB16 (12-13 ft) 12/22/10 RI	BC-SB16 (14-15 ft) 12/22/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26				0.0035	0.0015 J			
Acenaphthylene in mg/kg						0.0036	0.0068			
Anthracene in mg/kg	3.5	3.5				0.0047	0.021			
Benzo(g,h,i)perylene in mg/kg						0.03	0.019			
Dibenzofuran in mg/kg	80	3,500				0.0071	0.0029 J			
Fluoranthene in mg/kg	2.6	2.6				0.019	0.083			
Fluorene in mg/kg	0.37	0.37				0.0039	0.0073			
Phenanthrene in mg/kg						0.03	0.062			
Pyrene in mg/kg	16	16				0.021	0.059			
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000				0.018	0.019			
Naphthalene in mg/kg	1.6	1.6				0.021	0.008			
Total Naphthalenes in mg/kg						0.039	0.027			
Benz(a)anthracene in mg/kg	0.12	0.12				0.0067	0.037			
Benzo(a)pyrene in mg/kg	0.14	0.31				0.0084	0.029			
Benzo(b)fluoranthene in mg/kg	0.38	0.38				0.013	0.037			
Benzo(k)fluoranthene in mg/kg	0.38	0.38				0.0032	0.016			
Chrysene in mg/kg	0.13	0.13				0.014	0.046			
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58				0.0027 J	0.0043			
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1				0.011	0.017			
Total cPAHs TEQ in mg/kg	0.14	0.31				0.0122	0.0406			
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB17 (3-4 ft) 12/22/10 RI	BC-SB17 (4-5 ft) 12/22/10 RI	BC-SB17 (6-7 ft) 12/22/10 RI	BC-SB17 FD (8-9 ft) 12/22/10 RI	BC-SB17 (8-9 ft) 12/22/10 RI	BC-SB17 (9-10 ft) 12/22/10 RI	BC-SB18 (3-4 ft) 12/22/10 RI	BC-SB18 (6-7 ft) 12/22/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			630	11 UJ	22 UJ	15,000	16,000	21,000	6.0 UJ	12 UJ
Oil Range Hydrocarbons in mg/kg			3,200	46 UJ	86 UJ	15,000	15,000	16,000	6.7 UJ	44 UJ
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	3,830 J	57.0 J	108 J	30,000 J	31,000 J	37,000 J	12.7 J	56.0 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg							650			
Aliphatics C12-C16 (EPH) in mg/kg							3,100			
Aliphatics C16-C21 (EPH) in mg/kg							1,900			
Aliphatics C21-C34 (EPH) in mg/kg							4,700			
Aliphatics C8-C10 (EPH) in mg/kg							64			
Aromatics C10-C12 (EPH) in mg/kg							44 U			
Aromatics C12-C16 (EPH) in mg/kg							1,200			
Aromatics C16-C21 (EPH) in mg/kg							3,400			
Aromatics C21-C34 (EPH) in mg/kg							5,200			
Aromatics C8-C10 (EPH) in mg/kg							44 U			
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB17 (3-4 ft) 12/22/10 RI	BC-SB17 (4-5 ft) 12/22/10 RI	BC-SB17 (6-7 ft) 12/22/10 RI	BC-SB17 FD (8-9 ft) 12/22/10 RI	BC-SB17 (8-9 ft) 12/22/10 RI	BC-SB17 (9-10 ft) 12/22/10 RI	BC-SB18 (3-4 ft) 12/22/10 RI	BC-SB18 (6-7 ft) 12/22/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26					5.8	4.2		
Acenaphthylene in mg/kg							1.4 U	1.1 U		
Anthracene in mg/kg	3.5	3.5					10	4.6		
Benzo(g,h,i)perylene in mg/kg							2.3	1		
Dibenzofuran in mg/kg	80	3,500					2.6 U	1.9 U		
Fluoranthene in mg/kg	2.6	2.6					5.2	3.1		
Fluorene in mg/kg	0.37	0.37					8.4	7.2		
Phenanthrene in mg/kg							58	35		
Pyrene in mg/kg	16	16					29	12		
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000					120	110		
Naphthalene in mg/kg	1.6	1.6					14	13		
Total Naphthalenes in mg/kg							134	123		
Benz(a)anthracene in mg/kg	0.12	0.12					10	3.7		
Benzo(a)pyrene in mg/kg	0.14	0.31					4.5	2		
Benzo(b)fluoranthene in mg/kg	0.38	0.38					2.1	1		
Benzo(k)fluoranthene in mg/kg	0.38	0.38					0.35	0.22		
Chrysene in mg/kg	0.13	0.13					16	5.8		
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58					0.77	0.39		
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1					1.2	0.35		
Total cPAHs TEQ in mg/kg	0.14	0.31					6.1	2.62		
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB18 FD (9-10 ft) 12/22/10 RI	BC-SB18 (9-10 ft) 12/22/10 RI	BC-SB18 (12-13 ft) 12/22/10 RI	BC-SB18 (14-15 ft) 12/22/10 RI	BC-SB18 (18-19 ft) 12/22/10 RI	BC-SB19 (3-4 ft) 12/22/10 RI	BC-SB19 (6-7 ft) 12/22/10 RI	BC-SB19 FD (9-10 ft) 12/22/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			15,000	16,000	10,000	6.9 UJ	3.6 UJ	210	530	190
Oil Range Hydrocarbons in mg/kg			15,000	17,000	14,000	5.2 UJ	7.1 UJ	2,000	3,600	970 J
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	30,000 J	33,000 J	24,000 J	12.1 J	10.7 J	2,210 J	4,130 J	1,160 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg				340						
Aliphatics C12-C16 (EPH) in mg/kg				2,200						
Aliphatics C16-C21 (EPH) in mg/kg				2,100						
Aliphatics C21-C34 (EPH) in mg/kg				4,400						
Aliphatics C8-C10 (EPH) in mg/kg				49 U						
Aromatics C10-C12 (EPH) in mg/kg				49 U						
Aromatics C12-C16 (EPH) in mg/kg				800						
Aromatics C16-C21 (EPH) in mg/kg				2,700						
Aromatics C21-C34 (EPH) in mg/kg				5,000						
Aromatics C8-C10 (EPH) in mg/kg				49 U						
Heavy Metals										
Arsenic in mg/kg	7	7								
Cadmium in mg/kg	1	1								
Chromium (Total) in mg/kg	260	260								
Copper in mg/kg	36	36								
Lead in mg/kg	81	81								
Mercury in mg/kg	0.1	0.1								
Nickel in mg/kg	48	48								
Zinc in mg/kg	85	85								
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB18 FD (9-10 ft) 12/22/10 RI	BC-SB18 (9-10 ft) 12/22/10 RI	BC-SB18 (12-13 ft) 12/22/10 RI	BC-SB18 (14-15 ft) 12/22/10 RI	BC-SB18 (18-19 ft) 12/22/10 RI	BC-SB19 (3-4 ft) 12/22/10 RI	BC-SB19 (6-7 ft) 12/22/10 RI	BC-SB19 FD (9-10 ft) 12/22/10 RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		4		0.053			0.14	
Acenaphthylene in mg/kg				0.99 U		0.0031 U			0.019 J	
Anthracene in mg/kg	3.5	3.5		2.2		0.0043			0.12	
Benzo(g,h,i)perylene in mg/kg				4.2		0.0063			0.11	
Dibenzofuran in mg/kg	80	3,500		1.3 U		0.0076			0.12	
Fluoranthene in mg/kg	2.6	2.6		4		0.012			0.85	
Fluorene in mg/kg	0.37	0.37		5.5		0.018			0.17	
Phenanthrene in mg/kg				28		0.03			0.68	
Pyrene in mg/kg	16	16		11		0.015			0.7	
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000		3.1		0.091			0.19	
Naphthalene in mg/kg	1.6	1.6		1.5		0.38			2.1	
Total Naphthalenes in mg/kg				4.6		0.471			2.29	
Benz(a)anthracene in mg/kg	0.12	0.12		5.6		0.0031 J			0.21	
Benzo(a)pyrene in mg/kg	0.14	0.31		5.4		0.002 J			0.14	
Benzo(b)fluoranthene in mg/kg	0.38	0.38		3.1		0.0038			0.2	
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.5		0.0031 U			0.055	
Chrysene in mg/kg	0.13	0.13		9.1		0.0054			0.23	
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		1.4		0.0031 U			0.04	
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		1.5		0.0014 J			0.077	
Total cPAHs TEQ in mg/kg	0.14	0.31		6.7		0.00319			0.201	
Conventional Chemistry Parameters										
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB19 (9-10 ft) 12/22/10 RI	BC-SB19 (12-13 ft) 12/22/10 RI	BC-SB19 (17-18 ft) 12/22/10 RI	BC-SB19 (18-19 ft) 12/22/10 RI	BC-SB20 (7-8 ft) 12/22/10 RI	BC-SB20 (14.5-15 ft) 12/22/10 RI	BC-SB20 (19-20 ft) 12/22/10 RI	BH-SB02 (0-4 ft) 7/21/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100								
Diesel Range Hydrocarbons in mg/kg			130	130	430	390	2.7 UJ	34	63	
Oil Range Hydrocarbons in mg/kg			440 J	370	1,900 J	1,200	6.2 UJ	110 UJ	320	
Bunker C in mg/kg	3,100	10,000								
Total TPHs in mg/kg	3,100	10,000	570 J	500 J	2,330 J	1,590 J	8.9 J	144 J	383 J	
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7								5 U
Cadmium in mg/kg	1	1								0.3
Chromium (Total) in mg/kg	260	260								21.6
Copper in mg/kg	36	36								31.4
Lead in mg/kg	81	81								31 J
Mercury in mg/kg	0.1	0.1								0.08
Nickel in mg/kg	48	48								24
Zinc in mg/kg	85	85								67.6
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg										
Aroclor 1221 in mg/kg										
Aroclor 1232 in mg/kg										
Aroclor 1242 in mg/kg										
Aroclor 1248 in mg/kg										
Aroclor 1254 in mg/kg										
Aroclor 1260 in mg/kg										
Total PCBs in mg/kg	1	10								

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB19 (9-10 ft) 12/22/10 RI	BC-SB19 (12-13 ft) 12/22/10 RI	BC-SB19 (17-18 ft) 12/22/10 RI	BC-SB19 (18-19 ft) 12/22/10 RI	BC-SB20 (7-8 ft) 12/22/10 RI	BC-SB20 (14.5-15 ft) 12/22/10 RI	BC-SB20 (19-20 ft) 12/22/10 RI	BH-SB02 (0-4 ft) 7/21/04 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26		0.018			0.0011 J		0.018	
Acenaphthylene in mg/kg				0.0075			0.003 U		0.0029 J	
Anthracene in mg/kg	3.5	3.5		0.018			0.00087 J		0.017	
Benzo(g,h,i)perylene in mg/kg				0.05			0.0011 J		0.021	
Dibenzofuran in mg/kg	80	3,500		0.016			0.003 U		0.018	
Fluoranthene in mg/kg	2.6	2.6		0.084			0.002 J		0.1	
Fluorene in mg/kg	0.37	0.37		0.02			0.0009 J		0.018	
Phenanthrene in mg/kg				0.11			0.0023 J		0.057 J	
Pyrene in mg/kg	16	16		0.089			0.0019 J		0.14	
1-Methylnaphthalene in mg/kg	35	4,500								
2-Methylnaphthalene in mg/kg	320	14,000		0.11			0.039		0.025	
Naphthalene in mg/kg	1.6	1.6		0.058			0.011		0.057	
Total Naphthalenes in mg/kg				0.168			0.05		0.082	
Benz(a)anthracene in mg/kg	0.12	0.12		0.038			0.001 J		0.031	
Benzo(a)pyrene in mg/kg	0.14	0.31		0.042			0.00094 J		0.029	
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.052			0.0021 J		0.049	
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.017			0.003 U		0.013	
Chrysene in mg/kg	0.13	0.13		0.054			0.0012 J		0.031	
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.0086			0.003 U		0.0071	
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.039			0.003 U		0.015	
Total cPAHs TEQ in mg/kg	0.14	0.31		0.058			0.00171 J		0.0408	
Conventional Chemistry Parameters										
Moisture, % in %										3.5
pH in pH units	2.5 - 11	2.5 - 11								8.26

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BH-SB02 FD (4-8 ft) 7/21/04 Pre-RI	BH-SB02 (4-8 ft) 7/21/04 Pre-RI	BH-SB02 (8-12 ft) 7/21/04 Pre-RI	BH-SB02 (12-16 ft) 7/21/04 Pre-RI	GF-SB18 (0-4 ft) 7/20/04 Pre-RI	GF-SB18 (4-8 ft) 7/20/04 Pre-RI	GF-SB20 (0-4 ft) 7/22/04 Pre-RI	GF-SB20 (4-8 ft) 7/22/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg	100	100			42	36				
Diesel Range Hydrocarbons in mg/kg			320	290	5,400	1,000	52	12 U	67	
Oil Range Hydrocarbons in mg/kg			1,800	1,600	1,500	430	220	37	110	
Bunker C in mg/kg	3,100	10,000								3,100
Total TPHs in mg/kg	3,100	10,000	2,120	1,890	6,900	1,430	272	49	177	3,100
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in mg/kg										
Aliphatics C12-C16 (EPH) in mg/kg										
Aliphatics C16-C21 (EPH) in mg/kg										
Aliphatics C21-C34 (EPH) in mg/kg										
Aliphatics C8-C10 (EPH) in mg/kg										
Aromatics C10-C12 (EPH) in mg/kg										
Aromatics C12-C16 (EPH) in mg/kg										
Aromatics C16-C21 (EPH) in mg/kg										
Aromatics C21-C34 (EPH) in mg/kg										
Aromatics C8-C10 (EPH) in mg/kg										
Heavy Metals										
Arsenic in mg/kg	7	7	7 U	6 U			10 U	6 U	6 U	6 U
Cadmium in mg/kg	1	1	0.7	0.7			0.5 U	0.2 U	0.3	0.3
Chromium (Total) in mg/kg	260	260	33.9	30.7			44	34.8	37.5	41.6
Copper in mg/kg	36	36	52.0	53.0			33.1	44.5	53.5	65.2
Lead in mg/kg	81	81	54 J	46 J			16	29	55	42
Mercury in mg/kg	0.1	0.1	0.53	0.45			0.08	0.08 J	0.21	0.70
Nickel in mg/kg	48	48	30	31			42	38	28	38
Zinc in mg/kg	85	85	147	123			59	61.2 J	72.9	71.7
Polychlorinated Biphenyls (PCBs)										
Aroclor 1016 in mg/kg						0.24 U				
Aroclor 1221 in mg/kg						0.24 U				
Aroclor 1232 in mg/kg						0.24 U				
Aroclor 1242 in mg/kg						0.24 U				
Aroclor 1248 in mg/kg						0.24 U				
Aroclor 1254 in mg/kg						0.24 J				
Aroclor 1260 in mg/kg						0.24 U				
Total PCBs in mg/kg	1	10				0.96 J				

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BH-SB02 FD (4-8 ft) 7/21/04 Pre-RI	BH-SB02 (4-8 ft) 7/21/04 Pre-RI	BH-SB02 (8-12 ft) 7/21/04 Pre-RI	BH-SB02 (12-16 ft) 7/21/04 Pre-RI	GF-SB18 (0-4 ft) 7/20/04 Pre-RI	GF-SB18 (4-8 ft) 7/20/04 Pre-RI	GF-SB20 (0-4 ft) 7/22/04 Pre-RI	GF-SB20 (4-8 ft) 7/22/04 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in mg/kg	0.26	0.26				57				
Acenaphthylene in mg/kg						1				
Anthracene in mg/kg	3.5	3.5				15				
Benzo(g,h,i)perylene in mg/kg						0.37 U				
Dibenzofuran in mg/kg	80	3,500								
Fluoranthene in mg/kg	2.6	2.6				90				
Fluorene in mg/kg	0.37	0.37				48				
Phenanthrene in mg/kg						160				
Pyrene in mg/kg	16	16				52				
1-Methylnaphthalene in mg/kg	35	4,500				14				
2-Methylnaphthalene in mg/kg	320	14,000				26				
Naphthalene in mg/kg	1.6	1.6				68				
Total Naphthalenes in mg/kg						108				
Benz(a)anthracene in mg/kg	0.12	0.12				12				
Benzo(a)pyrene in mg/kg	0.14	0.31				3				
Benzo(b)fluoranthene in mg/kg	0.38	0.38				4.6				
Benzo(k)fluoranthene in mg/kg	0.38	0.38				6.2				
Chrysene in mg/kg	0.13	0.13				10				
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58				0.37 U				
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1				0.37 U				
Total cPAHs TEQ in mg/kg	0.14	0.31				5.42				
Conventional Chemistry Parameters										
Moisture, % in %			17.0	16.0						
pH in pH units	2.5 - 11	2.5 - 11	8.29	8.35	9.02	8.68	8.14	9.78	7.58	7.72

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB20 (12-16 ft) 7/22/04 Pre-RI	TS-MW01 (2.5-4 ft) 7/14/04 Pre-RI	TS-MW01 (5-6.5 ft) 7/14/04 Pre-RI	TS-SB01 (0-4 ft) 7/21/04 Pre-RI	TS-SB01 (4-8 ft) 7/21/04 Pre-RI	TS-SB02 (0-4 ft) 7/21/04 Pre-RI	TS-SB02 (4-8 ft) 7/21/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)									
Gasoline Range Hydrocarbons in mg/kg	100	100	6.1 U						
Diesel Range Hydrocarbons in mg/kg			35	21	5.1	79	8.2	37	11
Oil Range Hydrocarbons in mg/kg			98	130	21	980	80	220	68
Bunker C in mg/kg	3,100	10,000							
Total TPHs in mg/kg	3,100	10,000	133	151	26.1	1,059	88.2	257	79
Extractable Petroleum Hydrocarbons									
Aliphatics C10-C12 (EPH) in mg/kg									
Aliphatics C12-C16 (EPH) in mg/kg									
Aliphatics C16-C21 (EPH) in mg/kg									
Aliphatics C21-C34 (EPH) in mg/kg									
Aliphatics C8-C10 (EPH) in mg/kg									
Aromatics C10-C12 (EPH) in mg/kg									
Aromatics C12-C16 (EPH) in mg/kg									
Aromatics C16-C21 (EPH) in mg/kg									
Aromatics C21-C34 (EPH) in mg/kg									
Aromatics C8-C10 (EPH) in mg/kg									
Heavy Metals									
Arsenic in mg/kg	7	7		5 U	6 U	5 U	6 U	5 U	6 U
Cadmium in mg/kg	1	1		0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.2 U
Chromium (Total) in mg/kg	260	260		21.1	28.1	18.1	26.5	33.2	31.9
Copper in mg/kg	36	36		12.8 J	20.2 J	12.1	19.0	47.8	27.8
Lead in mg/kg	81	81		4	4	4	4	168	5
Mercury in mg/kg	0.1	0.1		0.05 U	0.05 U	0.04 J	0.05 J	0.10 J	0.06 J
Nickel in mg/kg	48	48		21	29	13	27	31	33
Zinc in mg/kg	85	85		30.5	39.5	24.0 J	40.1 J	85.2 J	55.4 J
Polychlorinated Biphenyls (PCBs)									
Aroclor 1016 in mg/kg					0.04 U	0.035 U		0.037 U	
Aroclor 1221 in mg/kg					0.04 U	0.035 U		0.037 U	
Aroclor 1232 in mg/kg					0.04 U	0.035 U		0.037 U	
Aroclor 1242 in mg/kg					0.04 U	0.035 U		0.037 U	
Aroclor 1248 in mg/kg					0.04 U	0.035 U		0.037 U	
Aroclor 1254 in mg/kg					0.04 U	0.035 U		0.037 U	
Aroclor 1260 in mg/kg					0.04 U	0.035 U		0.037 U	
Total PCBs in mg/kg	1	10			0.14 U	0.123 U		0.13 U	

Table 7-6A - Soil Chemistry Data for Bunker C Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB20 (12-16 ft) 7/22/04 Pre-RI	TS-MW01 (2.5-4 ft) 7/14/04 Pre-RI	TS-MW01 (5-6.5 ft) 7/14/04 Pre-RI	TS-SB01 (0-4 ft) 7/21/04 Pre-RI	TS-SB01 (4-8 ft) 7/21/04 Pre-RI	TS-SB02 (0-4 ft) 7/21/04 Pre-RI	TS-SB02 (4-8 ft) 7/21/04 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)									
Acenaphthene in mg/kg	0.26	0.26			0.0079 U	0.017 U		0.0075 U	
Acenaphthylene in mg/kg					0.0079 U	0.017 U		0.0075 U	
Anthracene in mg/kg	3.5	3.5			0.0079 U	0.017 U		0.0075 U	
Benzo(g,h,i)perylene in mg/kg					0.0079 U	0.017 U		0.0085	
Dibenzofuran in mg/kg	80	3,500			0.0079 U				
Fluoranthene in mg/kg	2.6	2.6			0.011	0.026		0.028	
Fluorene in mg/kg	0.37	0.37			0.0079 U	0.017 U		0.0075 U	
Phenanthrene in mg/kg					0.017	0.021		0.022	
Pyrene in mg/kg	16	16			0.0079 U	0.034		0.028	
1-Methylnaphthalene in mg/kg	35	4,500				0.017 U		0.0073 J	
2-Methylnaphthalene in mg/kg	320	14,000			0.0079 U	0.017 U		0.011	
Naphthalene in mg/kg	1.6	1.6			0.0079 U	0.017 U		0.046	
Total Naphthalenes in mg/kg					ND	ND		0.0643	
Benz(a)anthracene in mg/kg	0.12	0.12			0.0079 U	0.017 U		0.0079	
Benzo(a)pyrene in mg/kg	0.14	0.31			0.0079 U	0.017 U		0.014	
Benzo(b)fluoranthene in mg/kg	0.38	0.38			0.0079 U	0.037		0.017	
Benzo(k)fluoranthene in mg/kg	0.38	0.38			0.0079 U	0.024		0.017	
Chrysene in mg/kg	0.13	0.13			0.01	0.036		0.016	
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58			0.0079 U	0.017 U		0.0075 U	
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1			0.0079 U	0.017 U		0.0075 U	
Total cPAHs TEQ in mg/kg	0.14	0.31			0.00603	0.0175		0.0191	
Conventional Chemistry Parameters									
Moisture, % in %									
pH in pH units	2.5 - 11	2.5 - 11	7.35	6.16	8.10	8.07	8.05	7.93	8.14

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-DW01 06/30/11 RI	BC-DW01 07/04/11 RI	BC-DW01 07/20/11 RI	BC-MW01 07/27/04 Pre-RI	BC-MW01 04/01/10 RI	BC-MW01 12/15/10 RI	BC-MW02 10/01/09 RI	BC-MW02 10/01/09 Field Dup RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L						260				
Diesel Range Hydrocarbons in ug/L			29 J				1,200	35 J	280 U	280 U
Oil Range Hydrocarbons in ug/L			520 U				1,300	47 J	560 U	560 U
Bunker C in ug/L						6,700				
Total TPHs in ug/L						6,700	2,500	82.0 J	ND	ND
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L								40 U		
Aliphatics C12-C16 (EPH) in ug/L								40 U		
Aliphatics C16-C21 (EPH) in ug/L								40 U		
Aliphatics C21-C34 (EPH) in ug/L								40 U		
Aliphatics C8-C10 (EPH) in ug/L								40 U		
Aromatics C10-C12 (EPH) in ug/L								40 U		
Aromatics C12-C16 (EPH) in ug/L								40 U		
Aromatics C16-C21 (EPH) in ug/L								40 U		
Aromatics C21-C34 (EPH) in ug/L								40 U		
Aromatics C8-C10 (EPH) in ug/L								40 U		
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5			1.2	2.7	1.5 J		10 R	5.2 R
Dissolved Cadmium in ug/L	8.8	8.8			0.010 J	0.5 U	0.04		1.5 R	1.4 R
Dissolved Chromium (III) in ug/L						5.0				
Dissolved Chromium (Total) in ug/L	260	260			6.54	5	1.29		1.1 R	0.6 R
Dissolved Chromium (VI) in ug/L	50	50		50 U	50 U	112 U	50 U		50 U	50 U
Dissolved Copper in ug/L	3.1	3.1			1.06	1 U	2.4		12.7 R	11 R
Dissolved Lead in ug/L	8.1	8.1			0.542	2 U	0.123		412 R	334 R
Dissolved Mercury in ug/L	0.059	0.059			0.20 U	0.1 U	0.00175		0.001 U	0.00044 J
Dissolved Nickel in ug/L	8.2	8.2			4.98	2	3.72		32.4 R	30.1 R
Dissolved Selenium in ug/l	71	71			1.8					
Dissolved Silver in ug/L	1.9	1.9			0.02 J					
Dissolved Zinc in ug/L	81	81			38.6 J	10 U	0.9 J		208 R	195 R

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-DW01 06/30/11 RI	BC-DW01 07/04/11 RI	BC-DW01 07/20/11 RI	BC-MW01 07/27/04 Pre-RI	BC-MW01 04/01/10 RI	BC-MW01 12/15/10 RI	BC-MW02 10/01/09 RI	BC-MW02 10/01/09 Field Dup RI
Total Metals										
Total Arsenic in ug/l	5	5		10.0 U						
Total Cadmium in ug/l	8.8	8.8		0.5 U						
Total Chromium (Total) in ug/l	260	260		3.7						
Total Copper in ug/l	3.1	3.1		1.6 J						
Total Lead in ug/l	8.1	8.1		10.0 U						
Total Mercury in ug/L	0.059	0.059		0.00247						
Total Nickel in ug/l	8.2	8.2		2.0 U						
Total Selenium in ug/l	71	71		20.0 U						
Total Silver in ug/L	1.9	1.9		2 U						
Total Zinc in ug/l	81	81		6.5						
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3				1.6 J	0.31	0.013 J	0.045	0.037
Acenaphthylene in ug/L						0.39 J	0.14 U	0.014 J	0.022 U	0.023 U
Anthracene in ug/L	9.6	9.6				0.90 J	1.5 U	0.047	0.0058 J	0.0053 J
Benzo(g,h,i)perylene in ug/L						0.10 UJ	0.61	0.035	0.022 U	0.023 U
Fluoranthene in ug/L	3.3	3.3				0.40 J	0.96	0.049	0.028	0.027
Fluorene in ug/L	3	3				1.7 J	0.02 U	0.02 J	0.018 J	0.018 J
Phenanthrene in ug/L						1.2 J	1.2 U	0.04	0.022 U	0.023 U
Pyrene in ug/L	15	15				1.2 J	3.6 J	0.092	0.021 J	0.025
1-Methylnaphthalene in ug/L						12 J				
2-Methylnaphthalene in ug/L						7.0 J	0.24	0.0088 J	0.022 U	0.023 J
Naphthalene in ug/L	83	83				4.1 J	0.28	0.027 U	0.017 J	0.014 J
Total Naphthalenes in ug/L						23.1 J	0.52	0.0358 J	0.028 J	0.037 J
Dibenzofuran in ug/L						1.0 U	0.14	0.016 J	0.0068 J	0.0079 J
Benz(a)anthracene in ug/L	0.02	0.02				0.31 J	0.86	0.042	0.022 U	0.0061 J
Benzo(a)pyrene in ug/L	0.02	0.02				0.10 J	0.71	0.031	0.022 U	0.023 U
Benzo(b)fluoranthene in ug/L	0.02	0.02				0.10 UJ	0.56	0.035	0.022 U	0.023 U
Benzo(k)fluoranthene in ug/L	0.02	0.02				0.10 UJ	0.02 U	0.028	0.022 U	0.023 U
Chrysene in ug/L	0.02	0.02				0.49 J	1.6	0.048	0.022 U	0.023 U
Dibenzo(a,h)anthracene in ug/L	0.02	0.02				0.10 UJ	0.15	0.025	0.022 U	0.023 U
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02				0.10 UJ	0.21	0.029	0.022 U	0.023 U
Total cPAHs TEQ in ug/L	0.02	0.02				0.156 J	0.905	0.0474	ND	0.0168

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-DW01 06/30/11 RI	BC-DW01 07/04/11 RI	BC-DW01 07/20/11 RI	BC-MW01 07/27/04 Pre-RI	BC-MW01 04/01/10 RI	BC-MW01 12/15/10 RI	BC-MW02 10/01/09 RI	BC-MW02 10/01/09 Field Dup RI
Conventional Chemistry Parameters (including other metals)										
Dissolved Calcium in mg/L									241 R	236 R
Dissolved Iron in mg/L						0.19	0.188		0.554 R	0.566 R
Dissolved Magnesium in mg/L									999 R	995 R
Dissolved Manganese in mg/L	0.1	0.1				0.229	0.316		0.204 R	0.201 R
Dissolved Potassium in mg/L									291 R	288 R
Dissolved Sodium in mg/L									8,590 R	8,550 R
Formaldehyde in ug/L	1,600	1,600				6 U				
Nitrate + Nitrite in mg/L						0.312				
Nitrate as Nitrogen in mg/L						0.134				
Nitrite as Nitrogen in mg/L						0.178				
Sulfate in mg/L						39.7				
Total Calcium in mg/l				171						
Total Magnesium in mg/l				29.8						
Total Suspended Solids in mg/L						6,580	790	5 U	11.5	16.5
Field Parameters										
Conductivity in us/cm			1,490	1,365		1,168	444	409	40,700	
Dissolved Oxygen in mg/L				1.29		0.77	1.07	1.59	4.31	
Eh (ORP) in mVolts				-108.1		-124.6	-198.8	-6.4	-264.9	
pH in pH units	8.5	8.5	7.88	7.21	7.86	7.45	6.82	6.18	6.56	
Practical Salinity (Calculated) in PSU						0.6	0.2		25.6	
Temperature in deg C			17.4	15.4		22.31	10.79	10.83	15.9	
Turbidity in NTU						>1000		10	10	

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW02 04/01/10 RI	BC-MW02 04/01/10 Field Dup RI	BC-MW02 12/15/10 RI	BC-MW03 09/28/09 RI	BC-MW03 04/01/10 RI	BC-MW03 12/16/10 RI	BC-MW04 12/21/10 RI	BC-MW05 12/19/10 RI
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in ug/L										
Diesel Range Hydrocarbons in ug/L			28 J	30 J	14 J	270 U	26 J	260 UJ	77 UJ	35 UJ
Oil Range Hydrocarbons in ug/L			21 J	32 J	530 UJ	530 U	28 J	520 UJ	84 UJ	53 UJ
Bunker C in ug/L										
Total TPHs in ug/L			49 J	62 J	279 J	ND	54 J	ND	161 J	88.0 J
Extractable Petroleum Hydrocarbons										
Aliphatics C10-C12 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aliphatics C12-C16 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aliphatics C16-C21 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aliphatics C21-C34 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aliphatics C8-C10 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aromatics C10-C12 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aromatics C12-C16 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aromatics C16-C21 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aromatics C21-C34 (EPH) in ug/L					40 U			40 U	40 U	40 U
Aromatics C8-C10 (EPH) in ug/L					40 U			40 U	40 U	40 U
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5	0.66 U	0.61 U			0.15 U			
Dissolved Cadmium in ug/L	8.8	8.8	0.012 U	0.016 U			0.014 U			
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260	3.03	2.3			1.66			
Dissolved Chromium (VI) in ug/L	50	50	50 U	50 U			50 U			
Dissolved Copper in ug/L	3.1	3.1	0.232 J	0.121 J			0.14 J			
Dissolved Lead in ug/L	8.1	8.1	0.045 U	0.1 U			0.1 U			
Dissolved Mercury in ug/L	0.059	0.059	0.00058 J	0.00036 J			0.00021 J			
Dissolved Nickel in ug/L	8.2	8.2	0.1 J	0.47 J			1.67 U			
Dissolved Selenium in ug/l	71	71								
Dissolved Silver in ug/L	1.9	1.9								
Dissolved Zinc in ug/L	81	81	1.18 U	0.69 U			0.47 U			

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW02 04/01/10 RI	BC-MW02 04/01/10 Field Dup RI	BC-MW02 12/15/10 RI	BC-MW03 09/28/09 RI	BC-MW03 04/01/10 RI	BC-MW03 12/16/10 RI	BC-MW04 12/21/10 RI	BC-MW05 12/19/10 RI
Total Metals										
Total Arsenic in ug/l	5	5								
Total Cadmium in ug/l	8.8	8.8								
Total Chromium (Total) in ug/l	260	260								
Total Copper in ug/l	3.1	3.1								
Total Lead in ug/l	8.1	8.1								
Total Mercury in ug/L	0.059	0.059								
Total Nickel in ug/l	8.2	8.2								
Total Selenium in ug/l	71	71								
Total Silver in ug/L	1.9	1.9								
Total Zinc in ug/l	81	81								
Polycyclic Aromatic Hydrocarbons (PAHs)										
Acenaphthene in ug/L	3.3	3.3	10	11	4.5	0.29	0.044	0.017 J	0.040	0.33
Acenaphthylene in ug/L			0.029 U	0.033 U	0.025 U	0.012 J	0.0055 J	0.0041 J	0.0037 J	0.020 U
Anthracene in ug/L	9.6	9.6	0.05 U	0.043 U	0.04 U	0.042	0.02 J	0.018 J	0.0060 J	0.20 U
Benzo(g,h,i)perylene in ug/L			0.02 U	0.0075 J	0.016 J	0.02 U	0.0066 J	0.02 U	0.020 U	0.020 U
Fluoranthene in ug/L	3.3	3.3	0.068	0.077	0.074	0.31	0.32	0.22	0.0086 J	0.044 J
Fluorene in ug/L	3	3	0.035 U	0.033 U	0.03	0.085	0.016 J	0.0086 J	0.020 U	0.030
Phenanthrene in ug/L			0.021 U	0.022 U	0.027 U	0.12	0.04	0.019 J	0.012 J	0.20 U
Pyrene in ug/L	15	15	0.1	0.11	0.13	0.21	0.28	0.2	0.0070 J	0.045
1-Methylnaphthalene in ug/L										
2-Methylnaphthalene in ug/L			0.02 U	0.019 U	0.027 U	0.02 J	0.0045 J	0.007 J	0.010 J	0.0089 J
Naphthalene in ug/L	83	83	0.032	0.028	0.29	0.014 J	0.093	0.026 U	0.072	0.044
Total Naphthalenes in ug/L			0.042	0.0375	0.3035	0.034 J	0.0975	0.033 J	0.082 J	0.0529 J
Dibenzofuran in ug/L			0.017 J	0.019 J	0.017 J	0.01 J	0.0073 J	0.005 J	0.020 U	0.0056 J
Benz(a)anthracene in ug/L	0.02	0.02	0.011 J	0.013 J	0.021	0.011 J	0.017 J	0.011 J	0.0037 J	0.0058 J
Benzo(a)pyrene in ug/L	0.02	0.02	0.02 U	0.019 U	0.013 J	0.02 U	0.02 U	0.02 U	0.020 U	0.020 U
Benzo(b)fluoranthene in ug/L	0.02	0.02	0.02 U	0.014 J	0.017 J	0.0037 J	0.0068 J	0.02 U	0.020 U	0.020 U
Benzo(k)fluoranthene in ug/L	0.02	0.02	0.02 U	0.019 U	0.016 J	0.02 U	0.02 U	0.02 U	0.020 U	0.020 U
Chrysene in ug/L	0.02	0.02	0.0065 J	0.0069 J	0.021	0.011 J	0.012 J	0.013 J	0.020 U	0.020 U
Dibenzo(a,h)anthracene in ug/L	0.02	0.02	0.02 U	0.019 U	0.01 J	0.02 U	0.02 U	0.02 U	0.020 U	0.020 U
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02	0.02 U	0.006 J	0.013 J	0.02 U	0.0055 J	0.02 U	0.020 U	0.020 U
Total cPAHs TEQ in ug/L	0.02	0.02	0.0152 J	0.0148 J	0.0209	0.0146	0.0151 J	0.0152 J	0.0145 J	0.0147 J

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW02 04/01/10 RI	BC-MW02 04/01/10 Field Dup RI	BC-MW02 12/15/10 RI	BC-MW03 09/28/09 RI	BC-MW03 04/01/10 RI	BC-MW03 12/16/10 RI	BC-MW04 12/21/10 RI	BC-MW05 12/19/10 RI
Conventional Chemistry Parameters (including other metals)										
Dissolved Calcium in mg/L										
Dissolved Iron in mg/L			0.099 J				0.116			
Dissolved Magnesium in mg/L										
Dissolved Manganese in mg/L	0.1	0.1	0.884				0.49			
Dissolved Potassium in mg/L										
Dissolved Sodium in mg/L										
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L										
Nitrite as Nitrogen in mg/L										
Sulfate in mg/L										
Total Calcium in mg/l										
Total Magnesium in mg/l										
Total Suspended Solids in mg/L			14	11.5	5 U	12.5	30	5 U	5.0	11.0
Field Parameters										
Conductivity in us/cm			26,660		23,420	1,224	1,246	11,170	19,400	25,250
Dissolved Oxygen in mg/L			0.45		0.87	0.31	0.96	0.36	1.32	0.22
Eh (ORP) in mVolts			-296.7		-284.4	-39.2	-279.5	-291	-177.9	-313.1
pH in pH units	8.5	8.5	6.69		6.77	7.79	7.95	8.02	7.15	7.64
Practical Salinity (Calculated) in PSU			16.1			0.6	0.6			
Temperature in deg C			9.94		10.53	17.09	10.92	11.84	12.84	10.82
Turbidity in NTU			10			10	10	10	3.93	2.75

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	GF-SB20 07/22/04 Pre-RI	TS-MW01 07/25/04 Pre-RI	TS-MW01 10/01/09 RI	TS-MW01 04/01/10 RI
Total Petroleum Hydrocarbons (TPH)						
Gasoline Range Hydrocarbons in ug/L				250 U		
Diesel Range Hydrocarbons in ug/L				320 J		
Oil Range Hydrocarbons in ug/L				500 U		
Bunker C in ug/L						
Total TPHs in ug/L				570 J		
Extractable Petroleum Hydrocarbons						
Aliphatics C10-C12 (EPH) in ug/L						
Aliphatics C12-C16 (EPH) in ug/L						
Aliphatics C16-C21 (EPH) in ug/L						
Aliphatics C21-C34 (EPH) in ug/L						
Aliphatics C8-C10 (EPH) in ug/L						
Aromatics C10-C12 (EPH) in ug/L						
Aromatics C12-C16 (EPH) in ug/L						
Aromatics C16-C21 (EPH) in ug/L						
Aromatics C21-C34 (EPH) in ug/L						
Aromatics C8-C10 (EPH) in ug/L						
Dissolved Metals						
Dissolved Arsenic in ug/L	5	5	2	0.5	0.69	0.5 U
Dissolved Cadmium in ug/L	8.8	8.8	0.5 U	0.2 U	0.005 J	0.02 U
Dissolved Chromium (III) in ug/L			7.00	0.5 U		
Dissolved Chromium (Total) in ug/L	260	260	7	1 U	1.98	0.78
Dissolved Chromium (VI) in ug/L	50	50		11 U	50 U	50 U
Dissolved Copper in ug/L	3.1	3.1	1 U	0.5	0.42	0.57
Dissolved Lead in ug/L	8.1	8.1	2 U	1 U	0.02 U	0.028
Dissolved Mercury in ug/L	0.059	0.059	0.1 U	0.1 U	0.00108	0.0009 J
Dissolved Nickel in ug/L	8.2	8.2	3	0.6	0.5	2.37
Dissolved Selenium in ug/l	71	71				
Dissolved Silver in ug/L	1.9	1.9				
Dissolved Zinc in ug/L	81	81	10 U	4 U	0.25 J	0.3 U

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	GF-SB20 07/22/04 Pre-RI	TS-MW01 07/25/04 Pre-RI	TS-MW01 10/01/09 RI	TS-MW01 04/01/10 RI
Total Metals						
Total Arsenic in ug/l	5	5				
Total Cadmium in ug/l	8.8	8.8				
Total Chromium (Total) in ug/l	260	260				
Total Copper in ug/l	3.1	3.1				
Total Lead in ug/l	8.1	8.1				
Total Mercury in ug/L	0.059	0.059				
Total Nickel in ug/l	8.2	8.2				
Total Selenium in ug/l	71	71				
Total Silver in ug/L	1.9	1.9				
Total Zinc in ug/l	81	81				
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene in ug/L	3.3	3.3		0.10 U		
Acenaphthylene in ug/L				0.10 U		
Anthracene in ug/L	9.6	9.6		0.10 U		
Benzo(g,h,i)perylene in ug/L				0.10 U		
Fluoranthene in ug/L	3.3	3.3		0.10 U		
Fluorene in ug/L	3	3		0.10 U		
Phenanthrene in ug/L				0.10 U		
Pyrene in ug/L	15	15		0.10 U		
1-Methylnaphthalene in ug/L				0.10 U		
2-Methylnaphthalene in ug/L				0.10 U		
Naphthalene in ug/L	83	83		0.10 U		
Total Naphthalenes in ug/L				ND		
Dibenzofuran in ug/L				1.0 U		
Benz(a)anthracene in ug/L	0.02	0.02		0.10 U		
Benzo(a)pyrene in ug/L	0.02	0.02		0.10 U		
Benzo(b)fluoranthene in ug/L	0.02	0.02		0.10 U		
Benzo(k)fluoranthene in ug/L	0.02	0.02		0.10 U		
Chrysene in ug/L	0.02	0.02		0.10 U		
Dibenzo(a,h)anthracene in ug/L	0.02	0.02		0.10 U		
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02		0.10 U		
Total cPAHs TEQ in ug/L	0.02	0.02		ND		

Table 7-6B - Groundwater TPH, PAH, and Metals Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	GF-SB20 07/22/04 Pre-RI	TS-MW01 07/25/04 Pre-RI	TS-MW01 10/01/09 RI	TS-MW01 04/01/10 RI
Conventional Chemistry Parameters (including other metals)						
Dissolved Calcium in mg/L					108	
Dissolved Iron in mg/L			3.36	2.24	1.35	2.14
Dissolved Magnesium in mg/L					17	
Dissolved Manganese in mg/L	0.1	0.1	2.24	0.392	0.362	0.498
Dissolved Potassium in mg/L					18.6	
Dissolved Sodium in mg/L					75.1	
Formaldehyde in ug/L	1,600	1,600		19 U		
Nitrate + Nitrite in mg/L				0.010 U		
Nitrate as Nitrogen in mg/L				0.010 U		
Nitrite as Nitrogen in mg/L				0.010 U		
Sulfate in mg/L				3.6		
Total Calcium in mg/l						
Total Magnesium in mg/l						
Total Suspended Solids in mg/L				3.3		
Field Parameters						
Conductivity in us/cm				533	1,038	1,058
Dissolved Oxygen in mg/L				1.17	0.81	0.51
Eh (ORP) in mVolts				-117.7	-319.1	-188.9
pH in pH units	8.5	8.5		7.18	7.35	7.31
Practical Salinity (Calculated) in PSU				0.3	0.5	0.5
Temperature in deg C				19.55	18.87	10.85
Turbidity in NTU				1.80	10	10

Table 7-6C - Groundwater VOC, SVOC, and PCB Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW01 07/27/04 Pre-RI	TS-MW01 07/25/04 Pre-RI
Other Semivolatiles				
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	1.0 U	1.0 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	1.0 U	1.0 U
1,3-Dichlorobenzene in ug/L	960	960	1.0 U	1.0 U
1,4-Dichlorobenzene in ug/L	5	5	1.0 U	1.0 U
2,4,5-Trichlorophenol in ug/L	3,600	3,600	5.0 U	5.0 U
2,4,6-Trichlorophenol in ug/L	2.4	2.4	5.0 U	5.0 U
2,4-Dichlorophenol in ug/L	73	73	3.0 U	3.0 U
2,4-Dimethylphenol in ug/L	200	200	3.0 U	3.0 U
2,4-Dinitrophenol in ug/L	1,400	1,400	25 U	25 U
2-Chloronaphthalene in ug/L	390	390	1.0 U	1.0 U
2-Chlorophenol in ug/L	37	37	1.0 U	1.0 U
2-Methylphenol in ug/L			1.0 U	1.0 U
2-Nitroaniline in ug/L			5.0 U	5.0 U
2-Nitrophenol in ug/L			5.0 U	5.0 U
3,3'-Dichlorobenzidine in ug/L	2	2	5.0 U	5.0 U
3-Nitroaniline in ug/L			6.0 U	6.0 U
4,6-Dinitro-2-methylphenol in ug/L			15 U	10 U
4-Bromophenyl phenyl ether in ug/L			1.0 U	1.0 U
4-Chloro-3-methylphenol in ug/L			2.0 U	2.0 U
4-Chloroaniline in ug/L			3.0 U	3.0 U
4-Chlorophenyl phenyl ether in ug/L			1.0 U	1.0 U
4-Methylphenol in ug/L			1.0 U	1.0 U
4-Nitroaniline in ug/L			5.0 U	5.0 U
4-Nitrophenol in ug/L			5.0 U	5.0 U
Benzoic acid in ug/L			10 U	10 U
Benzyl alcohol in ug/L			5.0 U	5.0 U
Benzyl butyl phthalate in ug/L	0.35	0.35	1.0 U	1.0 U
Bis(2-chloro-1-methylethyl) ether in ug/L	14	14	1.0 U	1.0 U
Bis(2-chloroethoxy)methane in ug/L			1.0 U	1.0 U
Bis(2-chloroethyl) ether in ug/L	0.53	0.53	2.0 U	2.0 U
Bis(2-ethylhexyl) phthalate in ug/L	1	1	1.0 U	1.0 U
Carbazole in ug/L			1.0 U	1.0 U
Diethyl phthalate in ug/L	740	740	1.0 U	1.0 U
Dimethyl phthalate in ug/L	1,100,000	1,100,000	1.0 U	1.0 U
Di-n-butyl phthalate in ug/L	140	140	1.0 U	1.0 U
Di-n-octyl phthalate in ug/L	0.2	0.2	1.0 U	1.0 U
Hexachlorobenzene in ug/L	0.2	0.2	1.0 U	1.0 U
Hexachlorobutadiene in ug/L	0.2	0.2	2.0 U	2.0 U
Hexachlorocyclopentadiene in ug/L	1,100	1,100	5.0 U	5.0 U
Hexachloroethane in ug/L	3.3	3.3	2.0 U	2.0 U
Isophorone in ug/L	600	600	1.0 U	1.0 U
Nitrobenzene in ug/L	690	690	1.0 U	1.0 U
N-Nitroso-di-n-propylamine in ug/L	0.32	0.32	2.0 U	2.0 U
N-Nitrosodiphenylamine in ug/L	3.7	3.7	1.0 U	1.0 U
Pentachlorophenol in ug/L	3	3	5.0 U	5.0 U
Phenol in ug/L	216,000	216,000	2.0 U	2.0 U
2,4-Dinitrotoluene in ug/L	3.4	3.4	5.0 U	5.0 U
2,6-Dinitrotoluene in ug/L			5.0 U	5.0 U
Total Naphthalenes in ug/L			23.1 J	ND

Table 7-6C - Groundwater VOC, SVOC, and PCB Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW01 07/27/04 Pre-RI	TS-MW01 07/25/04 Pre-RI
Volatile Organic Compounds (VOC)				
1,1,1,2-Tetrachloroethane in ug/L	7.4	74	5.0 U	1.0 U
1,1,1-Trichloroethane in ug/L	11,000	25,000	5.0 U	1.0 U
1,1,2 - Trichlorotrifluoroethane in ug/L	1,100	2,400	10 U	2.0 U
1,1,2,2-Tetrachloroethane in ug/L	4	4	5.0 U	1.0 U
1,1,2-Trichloroethane in ug/L	7.9	16	5.0 U	1.0 U
1,1-Dichloroethane in ug/L	2,300	5,000	5.0 U	1.0 U
1,1-Dichloroethene in ug/L	3.2	3.2	5.0 U	1.0 U
1,1-Dichloropropene in ug/L			5.0 U	1.0 U
1,2,3-Trichlorobenzene in ug/L			25 U	5.0 U
1,2,3-Trichloropropane in ug/L			15 U	3.0 U
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	25 U	5.0 U
1,2,4-Trimethylbenzene in ug/L	24	52	5.0 U	1.0 U
1,2-Dibromo-3-chloropropane in ug/L			25 U	5.0 U
1,2-Dibromoethane (EDB) in ug/L	2	7.4	5.0 U	1.0 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	5.0 U	1.0 U
1,2-Dichloroethane (EDC) in ug/L	4.2	37	5.0 U	1.0 U
1,2-Dichloropropane in ug/L	15	15	5.0 U	1.0 U
1,3,5-Trimethylbenzene in ug/L	25	54	5.0 U	1.0 U
1,3-Dichlorobenzene in ug/L	960	960	5.0 U	1.0 U
1,3-Dichloropropane in ug/L			5.0 U	1.0 U
1,4-Dichloro-2-Butene in ug/L			25 U	5.0 U
1,4-Dichlorobenzene in ug/L	5	5	5.0 U	1.0 U
2,2-Dichloropropane in ug/L			5.0 U	1.0 U
2-Butanone in ug/L	350,000	760,000	25 U	5.0 U
2-Chloroethyl Vinyl Ether in ug/L			25 U	5.0 U
2-Chlorotoluene in ug/L			5.0 U	1.0 U
2-Hexanone in ug/L			25 U	5.0 U
4-Chlorotoluene in ug/L			5.0 U	1.0 U
4-Methyl-2-pentanone in ug/L	11,000	24,000	25 U	5.0 U
Acetone in ug/L			25 U	5.0 U
Acrolein in ug/L	20	20	250 U	50 U
Acrylonitrile in ug/L	5	5	5.0 U	1.0 U
Benzene in ug/L	2.4	24	5.0 U	1.0 U
Bromobenzene in ug/L			5.0 U	1.0 U
Bromochloromethane in ug/L			5.0 U	1.0 U
Bromodichloromethane in ug/L	0.5	0.9	5.0 U	1.0 U
Bromoethane in ug/L			10 U	2.0 U
Bromoform in ug/L	140	140	5.0 U	1.0 U
Bromomethane in ug/L	13	28	5.0 U	1.0 U
Carbon disulfide in ug/L	400	870	5.0 U	1.0 U
Carbon tetrachloride in ug/L	0.5	1.6	5.0 U	1.0 U
Chlorobenzene in ug/L	100	220	5.0 U	1.0 U
Chloroethane in ug/L	12	120	5.0 U	1.0 U
Chloroform in ug/L	1.2	12	5.0 U	1.0 U
Chloromethane in ug/L	5.2	52	5.0 U	1.0 U
cis-1,2-Dichloroethene (DCE) in ug/L	160	350	5.0 U	1.0 U
cis-1,3-Dichloropropene in ug/L			5.0 U	1.0 U
Dibromochloromethane in ug/L	0.5	2.2	5.0 U	1.0 U
Dibromomethane in ug/L			5.0 U	1.0 U
Ethylbenzene in ug/L	2,100	2,100	5.0 U	1.0 U
Hexachlorobutadiene in ug/L	0.2	0.2	25 U	5.0 U
Isopropylbenzene in ug/L	720	1,600	5.0 U	1.0 U
Methylene chloride in ug/L	94	590	10 U	2.0 U

Table 7-6C - Groundwater VOC, SVOC, and PCB Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW01 07/27/04 Pre-RI	TS-MW01 07/25/04 Pre-RI
Methyliodide in ug/L			5.0 U	1.0 U
n-Butylbenzene in ug/L			5.0 U	1.0 U
n-Propylbenzene in ug/L			5.0 U	1.0 U
p-Isopropyltoluene in ug/L			5.0 U	1.0 U
sec-Butylbenzene in ug/L			5.0 U	1.0 U
Styrene in ug/L	78	780	5.0 U	1.0 U
tert-Butylbenzene in ug/L			5.0 U	1.0 U
Tetrachloroethene (PCE) in ug/L	3.3	3.3	5.0 U	1.0 U
Toluene in ug/L	7,300	7,300	5.0 U	1.0 U
trans-1,2-Dichloroethene in ug/L	130	290	5.0 U	1.0 U
trans-1,3-Dichloropropene in ug/L			5.0 U	1.0 U
Trichloroethene (TCE) in ug/L	1.6	8.4	5.0 U	1.0 U
Trichlorofluoromethane in ug/L	120	260	5.0 U	1.0 U
Vinyl acetate in ug/L	7,800	17,000	25 U	5.0 U
Vinyl chloride in ug/L	0.5	2.4	5.0 U	1.0 U
o-Xylene in ug/L	440	960	5.0 U	1.0 U
Xylenes (total) in ug/L			5.00 U	1.00 U
Naphthalene in ug/L	83	83	25 U	5.0 U
Polychlorinated Biphenyls (PCBs)				
Aroclor 1016 in ug/L in ug/L			0.10 U	0.10 U
Aroclor 1221 in ug/L			0.10 U	0.10 U
Aroclor 1232 in ug/L			0.10 U	0.10 U
Aroclor 1242 in ug/L			0.10 U	0.10 U
Aroclor 1248 in ug/L			0.10 U	0.10 U
Aroclor 1254 in ug/L			0.10 U	0.10 U
Aroclor 1260 in ug/L			0.10 U	0.10 U
Total PCBs in ug/L	0.1	0.1	0.35 U	0.35 U

Table 7-6D - Soil Vapor Chemistry Data for Bunker C Tank Subarea

GP West RI/FS 070188

Chemical Name	Unrestricted Soil Gas Screening Level	Industrial Soil Gas Screening Level	BC-VP01 02/03/2011 RI	BC-VP02 02/03/2011 RI	BC-VP03 02/08/2011 RI	BC-VP04 02/03/2011 RI
Extractable Petroleum Hydrocarbons						
Aliphatics C10-C12 in ug/m3	1,360	2,975	1,200	100 U	100 U	110 U
Aliphatics C5-C6 in ug/m3	27,200	59,500	190 U	47 U	47 U	50 U
Aliphatics C6-C8 in ug/m3	27,200	59,500	240 U	60 U	60 U	63 U
Aliphatics C8-C10 in ug/m3	1,360	2,975	19,000	85 U	160	89 U
Aromatics C10-C12 in ug/m3	85	85	320 U	80 U	80 U	84 U
Aromatics C8-C10 in ug/m3	1,820	3,990	2,100	72 U	72 U	75 U
Volatile Organic Compounds (VOCs)						
Naphthalene in ug/m3	16	30	60 U	15 U	15 U	16 U

Table 7-7A - Soil Metals, TPH, and Conventionals Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AA-MW04 (1-2 ft) 9/15/09 RI	AA-MW04 (4-5 ft) 9/15/09 RI	AA-MW04 (8.5-9.5 ft) 9/15/09 RI	AA-MW04 (11-12 ft) 9/15/09 RI	ET-SS01 (0-0.5 ft) 7/21/04 Pre-RI	FH-MW01 (5-6.5 ft) 7/13/04 Pre-RI	FH-MW01 (10-11.5 ft) 7/13/04 Pre-RI	FH-SB01 (4-8 ft) 7/14/04 Pre-RI
Heavy Metals										
Arsenic in mg/kg	7	7	24.2	2.2 U	10.1	4		5 U	6 U	6 U
Cadmium in mg/kg	1	1	1.65	0.61	1.35	5.13		0.4	0.2 U	0.2 U
Chromium (Total) in mg/kg	260	260	25.4	21.8	21.4	26.8		22.7	26.8	18.0
Copper in mg/kg	36	36	82.4	25.4	603	10.9		15.5 J	17.4 J	10.9 J
Lead in mg/kg	81	81	718	5.3	6.2	1.6 J		3	3	4
Mercury in mg/kg	0.1	0.1	1.1	0.061	0.58	0.015 J		0.04 U	0.05 U	0.05 U
Nickel in mg/kg	48	48	12	6.49	11.6	27.3		38	30	21
Zinc in mg/kg	85	85	54.4	14.9	17.5	56		50.9	70.8	33.7
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg								5.4 U	5.6 U	6.9 U
Diesel Range Hydrocarbons in mg/kg	2,000	2,000					59	5.0 U	5.0 U	7.2
Oil Range Hydrocarbons in mg/kg	2,000	2,000					120	28	10 U	49
Bunker C in mg/kg	2,000	2,000								
Total TPHs in mg/kg	2,000	2,000					179	30.5	ND	56.2
Conventional Chemistry Parameters (including other metals)										
Iron in mg/kg	56,000	2,500,000	18,100	7,050	12,400	13,000				
Manganese in mg/kg	11,000	490,000	126	107	114	179				
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11	4.08	4.22	3.93	4.95	7.89	6.66	5.89	4.82

Table 7-7A - Soil Metals, TPH, and Conventionals Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	FH-SB01 (8-12 ft) 7/14/04 Pre-RI	GF-MW01 (0.5-2 ft) 7/13/04 Pre-RI	GF-MW01 (7.5-9 ft) 7/13/04 Pre-RI	GF-MW02 (2.5-4 ft) 7/20/04 Pre-RI	GF-MW02 (5-6.5 ft) 7/20/04 Pre-RI	GF-SB07 (0-4 ft) 7/22/04 Pre-RI	GF-SB07 (4-8 ft) 7/22/04 Pre-RI	GF-SB08 (0-4 ft) 7/14/04 Pre-RI
Heavy Metals										
Arsenic in mg/kg	7	7	6 U	5 U	20 U	9	6 U	5 U	5 U	5 U
Cadmium in mg/kg	1	1	0.2 U	0.2 U	0.6 U	0.3	0.2 U	0.2 U	0.2 U	0.2 U
Chromium (Total) in mg/kg	260	260	31.8	22.1	48.0	9.1	4.3	23.3	17.5	20.0
Copper in mg/kg	36	36	14.2 J	18.8 J	42.6 J	6.4	4.4	17.5	19.5	50.2 J
Lead in mg/kg	81	81	5	7	14	94 J	29 J	6	2	9
Mercury in mg/kg	0.1	0.1	0.05 U	0.05 U	0.07 J	0.24	0.09	0.04	0.05 U	0.05 U
Nickel in mg/kg	48	48	21	23	49	3	1 U	14	10	13
Zinc in mg/kg	85	85	34.4	36.4	74	10.0	4.0	27.1	16.7	34.1
Total Petroleum Hydrocarbons (TPH)										
Gasoline Range Hydrocarbons in mg/kg			5.6 U							
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	5.0 U	6.5		150	5.0 U	83	9.4	43
Oil Range Hydrocarbons in mg/kg	2,000	2,000	10 U	52		270	11	610	69	220
Bunker C in mg/kg	2,000	2,000			23					
Total TPHs in mg/kg	2,000	2,000	ND	58.5	23	420	13.5	693	78.4	263
Conventional Chemistry Parameters (including other metals)										
Iron in mg/kg	56,000	2,500,000								
Manganese in mg/kg	11,000	490,000								
Moisture, % in %										
pH in pH units	2.5 - 11	2.5 - 11	7.19	5.23	8.61	5.82	4.33	5.43	4.65	5.33

Table 7-7A - Soil Metals, TPH, and Conventionals Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB08 (8-12 ft) 7/14/04 Pre-RI	GF-SB09 (4-8 ft) 7/14/04 Pre-RI	GF-SB09 (8-12 ft) 7/14/04 Pre-RI	LB-MW01 (5-6.5 ft) 7/15/04 Pre-RI	LB-MW01 (7.5-9 ft) 7/15/04 Pre-RI
Heavy Metals							
Arsenic in mg/kg	7	7	6 U	6 U	6 U	6 U	20 U
Cadmium in mg/kg	1	1	0.2 U	0.4	0.2 U	0.3 U	0.6 U
Chromium (Total) in mg/kg	260	260	14.2	26.5	30.2	32.8	48.0
Copper in mg/kg	36	36	9.0 J	29.6 J	29.7 J	213 J	48.3 J
Lead in mg/kg	81	81	2 U	8	7	16	7
Mercury in mg/kg	0.1	0.1	0.05 U	0.48 J	0.08 J	0.19 J	0.05 J
Nickel in mg/kg	48	48	13	22	33	29	48
Zinc in mg/kg	85	85	25.6	44.5	58.5	53.8	66
Total Petroleum Hydrocarbons (TPH)							
Gasoline Range Hydrocarbons in mg/kg				6.5 U			
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	5.0 U	5.3	5.0 U	15	5.0 U
Oil Range Hydrocarbons in mg/kg	2,000	2,000	13	18	33	190	15
Bunker C in mg/kg	2,000	2,000					
Total TPHs in mg/kg	2,000	2,000	15.5	23.3	35.5	205	17.5
Conventional Chemistry Parameters (including other metals)							
Iron in mg/kg	56,000	2,500,000					
Manganese in mg/kg	11,000	490,000					
Moisture, % in %							
pH in pH units	2.5 - 11	2.5 - 11	7.91	7.47	7.82	7.92	8.04

Table 7-7B - Soil VOC, SVOC, and PCB Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	ET-SS01 (0-0.5 ft) 7/21/04 Pre-RI	GF-MW01 (7.5-9 ft) 7/13/04 Pre-RI	GF-SB08 (0-4 ft) 7/14/04 Pre-RI	LB-MW01 (5-6.5 ft) 7/15/04 Pre-RI	LB-MW01 (7.5-9 ft) 7/15/04 Pre-RI
Polycyclic Aromatic Hydrocarbons (PAHs)							
Acenaphthene in mg/kg	0.26	0.26				0.0091 U	0.0086 U
Acenaphthylene in mg/kg						0.0091 U	0.0086 U
Anthracene in mg/kg	3.5	3.5				0.0091 U	0.0086 U
Benzo(g,h,i)perylene in mg/kg						0.0091 U	0.0086 U
Fluoranthene in mg/kg	2.6	2.6				0.015	0.0086 U
Fluorene in mg/kg	0.37	0.37				0.0091 U	0.0086 U
Phenanthrene in mg/kg						0.01	0.0086 U
Pyrene in mg/kg	16	16				0.012	0.0086 U
1-Methylnaphthalene in mg/kg	35	4,500				0.0091 U	0.0086 U
2-Methylnaphthalene in mg/kg	320	14,000				0.0091 U	0.0086 U
Naphthalene in mg/kg	1.6	1.6				0.0091 U	0.0086 U
Total Naphthalenes in mg/kg						ND	ND
Benz(a)anthracene in mg/kg	0.12	0.12				0.0091 U	0.0086 U
Benzo(a)pyrene in mg/kg	0.14	0.31				0.0091 U	0.0086 U
Benzo(b)fluoranthene in mg/kg	0.38	0.38				0.0091 U	0.0086 U
Benzo(k)fluoranthene in mg/kg	0.38	0.38				0.0091 U	0.0086 U
Chrysene in mg/kg	0.13	0.13				0.013	0.0086 U
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58				0.0091 U	0.0086 U
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1				0.0091 U	0.0086 U
Total cPAHs TEQ in mg/kg	0.14	0.31				0.00696	ND
Other Semivolatiles							
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013				0.091 U	0.086 U
1,2-Dichlorobenzene in mg/kg	0.039	0.039				0.091 U	0.086 U
1,3-Dichlorobenzene in mg/kg						0.091 U	0.086 U
1,4-Dichlorobenzene in mg/kg	0.051	0.051				0.091 U	0.086 U
2,4,5-Trichlorophenol in mg/kg	93	93				0.46 U	0.43 U
2,4,6-Trichlorophenol in mg/kg	0.015	0.015				0.46 U	0.43 U
2,4-Dichlorophenol in mg/kg	0.2	0.2				0.27 U	0.26 U
2,4-Dimethylphenol in mg/kg	0.73	0.73				0.27 U	0.26 U
2,4-Dinitrophenol in mg/kg	0.4	0.4				0.91 U	0.86 U
2-Chloronaphthalene in mg/kg	6,400	280,000				0.091 U	0.086 U
2-Chlorophenol in mg/kg	0.24	0.24				0.091 U	0.086 U
2-Methylphenol in mg/kg	4,000	180,000				0.091 U	0.086 U
2-Nitroaniline in mg/kg	800	35,000				0.46 U	0.43 U
2-Nitrophenol in mg/kg						0.46 U	0.43 U
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1				0.46 U	0.43 U
3-Nitroaniline in mg/kg						0.55 U	0.52 U
4,6-Dinitro-2-methylphenol in mg/kg						0.91 U	0.86 U
4-Bromophenyl phenyl ether in mg/kg						0.091 U	0.086 U
4-Chloro-3-methylphenol in mg/kg						0.18 U	0.17 U
4-Chloroaniline in mg/kg	5	660				0.27 U	0.26 U
4-Chlorophenyl phenyl ether in mg/kg						0.091 U	0.086 U
4-Methylphenol in mg/kg	400	18,000				0.091 U	0.086 U
4-Nitroaniline in mg/kg						0.46 U	0.43 U
4-Nitrophenol in mg/kg						0.46 U	0.43 U
Benzoic acid in mg/kg	320,000	14,000,000				0.91 U	0.86 U
Benzyl alcohol in mg/kg	8,000	350,000				0.46 U	0.43 U
Benzyl butyl phthalate in mg/kg	0.079	0.079				0.091 U	0.086 U
Bis(2-chloro-1-methylethyl) ether in mg/k	14	1,900				0.091 U	0.086 U
Bis(2-chloroethoxy)methane in mg/kg						0.091 U	0.086 U
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01				0.18 U	0.17 U
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8				0.091 U	0.086 U
Carbazole in mg/kg						0.091 U	0.086 U

Table 7-7B - Soil VOC, SVOC, and PCB Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	ET-SS01 (0-0.5 ft) 7/21/04 Pre-RI	GF-MW01 (7.5-9 ft) 7/13/04 Pre-RI	GF-SB08 (0-4 ft) 7/14/04 Pre-RI	LB-MW01 (5-6.5 ft) 7/15/04 Pre-RI	LB-MW01 (7.5-9 ft) 7/15/04 Pre-RI
Dibenzofuran in mg/kg	80	3,500				0.091 U	0.086 U
Diethyl phthalate in mg/kg	1.2	1.2				0.091 U	0.086 U
Dimethyl phthalate in mg/kg						0.091 U	0.086 U
Di-n-butyl phthalate in mg/kg	3.6	3.6				0.091 U	0.086 U
Di-n-octyl phthalate in mg/kg	270	270				0.091 U	0.086 U
Hexachlorobenzene in mg/kg	0.26	0.26				0.091 U	0.086 U
Hexachlorobutadiene in mg/kg	0.17	0.17				0.18 U	0.17 U
Hexachlorocyclopentadiene in mg/kg	480	3,500				0.46 U	0.43 U
Hexachloroethane in mg/kg	0.096	0.096				0.18 U	0.17 U
Isophorone in mg/kg	0.62	0.62				0.091 U	0.086 U
Nitrobenzene in mg/kg	1.5	1.5				0.091 U	0.086 U
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01				0.18 U	0.17 U
N-Nitrosodiphenylamine in mg/kg	0.079	0.079				0.091 U	0.086 U
Pentachlorophenol in mg/kg	0.1	0.1				0.46 U	0.43 U
Phenol in mg/kg	160	160				0.18 U	0.17 U
2,4-Dinitrotoluene in mg/kg	0.01	0.01				0.46 U	0.43 U
2,6-Dinitrotoluene in mg/kg	80	3,500				0.46 U	0.43 U
Total Naphthalenes in mg/kg						ND	ND
Volatile Organic Compounds (VOC)							
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000		0.0012 U		0.0014 U	0.0013 U
1,1,1-Trichloroethane in mg/kg	28	63		0.0012 U		0.0014 U	0.0013 U
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000		0.0025 U		0.0028 U	0.0026 U
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062		0.0012 U		0.0014 U	0.0013 U
1,1,2-Trichloroethane in mg/kg	0.012	0.024		0.0012 U		0.0014 U	0.0013 U
1,1-Dichloroethane in mg/kg	2.6	5.7		0.0012 U		0.0014 U	0.0013 U
1,1-Dichloroethene in mg/kg	0.005	0.005		0.0012 U		0.0014 U	0.0013 U
1,1-Dichloropropene in mg/kg				0.0012 U		0.0014 U	0.0013 U
1,2,3-Trichlorobenzene in mg/kg				0.0062 U		0.0071 U	0.0064 U
1,2,3-Trichloropropane in mg/kg	0.033	4.4		0.0025 U		0.0028 U	0.0026 U
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013		0.0062 U		0.0071 U	0.0064 U
1,2,4-Trimethylbenzene in mg/kg				0.0012 U		0.0014 U	0.0013 U
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160		0.0062 U		0.0071 U	0.0064 U
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02		0.0012 U		0.0014 U	0.0013 U
1,2-Dichlorobenzene in mg/kg	0.039	0.039		0.0012 U		0.0014 U	0.0013 U
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033		0.0012 U		0.0014 U	0.0013 U
1,2-Dichloropropane in mg/kg	0.016	0.016		0.0012 U		0.0014 U	0.0013 U
1,3,5-Trimethylbenzene in mg/kg	800	35,000		0.0012 U		0.0014 U	0.0013 U
1,3-Dichlorobenzene in mg/kg				0.0012 U		0.0014 U	0.0013 U
1,3-Dichloropropane in mg/kg				0.0012 U		0.0014 U	0.0013 U
1,4-Dichloro-2-Butene in mg/kg				0.0062 U		0.0071 U	0.0064 U
1,4-Dichlorobenzene in mg/kg	0.051	0.051		0.0012 U		0.0014 U	0.0013 U
2,2-Dichloropropane in mg/kg				0.0012 U		0.0014 U	0.0013 U
2-Butanone in mg/kg	48,000	2,100,000		0.0062 U		0.0071 U	0.0064 U
2-Chloroethyl Vinyl Ether in mg/kg				0.0062 U		0.0071 U	0.0064 U
2-Chlorotoluene in mg/kg	1,600	70,000		0.0012 U		0.0014 U	0.0013 U
2-Hexanone in mg/kg				0.0062 U		0.0071 U	0.0064 U
4-Chlorotoluene in mg/kg				0.0012 U		0.0014 U	0.0013 U
4-Methyl-2-pentanone in mg/kg	6,400	280,000		0.0062 U		0.0071 U	0.0064 U
Acetone in mg/kg	72,000	3,200,000		0.0063		0.013	0.0099
Acrolein in mg/kg	40	1,800		0.062 U		0.071 U	0.064 U
Acrylonitrile in mg/kg	1.9	240		0.0062 U		0.0071 U	0.0064 U
Benzene in mg/kg	0.005	0.031		0.0012 U		0.0014 U	0.0013 U
Bromobenzene in mg/kg				0.0012 U		0.0014 U	0.0013 U
Bromochloromethane in mg/kg				0.0012 U		0.0014 U	0.0013 U

Table 7-7B - Soil VOC, SVOC, and PCB Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	ET-SS01 (0-0.5 ft) 7/21/04 Pre-RI	GF-MW01 (7.5-9 ft) 7/13/04 Pre-RI	GF-SB08 (0-4 ft) 7/14/04 Pre-RI	LB-MW01 (5-6.5 ft) 7/15/04 Pre-RI	LB-MW01 (7.5-9 ft) 7/15/04 Pre-RI
Bromodichloromethane in mg/kg	0.005	0.005		0.0012 U		0.0014 U	0.0013 U
Bromoethane in mg/kg				0.0025 U		0.0028 U	0.0026 U
Bromoform in mg/kg	0.33	0.33		0.0012 U		0.0014 U	0.0013 U
Bromomethane in mg/kg	0.0056	0.012		0.0012 U		0.0014 U	0.0013 U
Carbon disulfide in mg/kg	0.41	0.89		0.0012 U		0.0021	0.0013 U
Carbon tetrachloride in mg/kg	0.005	0.005		0.0012 U		0.0014 U	0.0013 U
Chlorobenzene in mg/kg	0.38	0.84		0.0012 U		0.0014 U	0.0013 U
Chloroethane in mg/kg				0.0012 U		0.0014 U	0.0013 U
Chloroform in mg/kg	0.005	0.014		0.0012 U		0.0014 U	0.0013 U
Chloromethane in mg/kg	0.005	0.02		0.0012 U		0.0014 U	0.0013 U
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3		0.0012 U		0.0014 U	0.0013 U
cis-1,3-Dichloropropene in mg/kg				0.0012 U		0.0014 U	0.0013 U
Dibromochloromethane in mg/kg	0.005	0.005		0.0012 U		0.0014 U	0.0013 U
Dibromomethane in mg/kg	800	35,000		0.0012 U		0.0014 U	0.0013 U
Ethylbenzene in mg/kg	7.3	7.3		0.0012 U		0.0014 U	0.0013 U
Hexachlorobutadiene in mg/kg	0.17	0.17		0.0062 U		0.0071 U	0.0064 U
Isopropylbenzene in mg/kg	8,000	350,000		0.0012 U		0.0014 U	0.0013 U
Methylene chloride in mg/kg	0.042	0.26		0.0025 U		0.0028 U	0.0028
Methyliodide in mg/kg				0.0012 U		0.0014 U	0.0013 U
n-Butylbenzene in mg/kg				0.0012 U		0.0014 U	0.0013 U
n-Propylbenzene in mg/kg	8,000	350,000		0.0012 U		0.0014 U	0.0013 U
p-Isopropyltoluene in mg/kg				0.0012 U		0.0014 U	0.0013 U
sec-Butylbenzene in mg/kg				0.0012 U		0.0014 U	0.0013 U
Styrene in mg/kg	1.2	12		0.0012 U		0.0014 U	0.0013 U
tert-Butylbenzene in mg/kg				0.0012 U		0.0014 U	0.0013 U
Tetrachloroethene (PCE) in mg/kg	0.015	0.015		0.0012 U		0.0014 U	0.0013 U
Toluene in mg/kg	18	18		0.0012 U		0.0014 U	0.0013 U
trans-1,2-Dichloroethene in mg/kg	0.12	0.26		0.0012 U		0.0014 U	0.0013 U
trans-1,3-Dichloropropene in mg/kg				0.0012 U		0.0014 U	0.0013 U
Trichloroethene (TCE) in mg/kg	0.005	0.015		0.0012 U		0.0014 U	0.0013 U
Trichlorofluoromethane in mg/kg	24,000	1,100,000		0.0012 U		0.0014 U	0.0013 U
Vinyl acetate in mg/kg	2.9	6.3		0.0062 U		0.0071 U	0.0064 U
Vinyl chloride in mg/kg	0.005	0.005		0.0012 U		0.0014 U	0.0013 U
o-Xylene in mg/kg	1.8	4		0.0012 U		0.0014 U	0.0013 U
Xylenes (total) in mg/kg	16,000	700,000		0.0012 U		0.0014 U	0.0013 U
Naphthalene in mg/kg	1.6	1.6		0.0062 U			
Polychlorinated Biphenyls (PCBs)							
Aroclor 1016 in mg/kg			0.035 U		0.036 U		
Aroclor 1221 in mg/kg			0.035 U		0.036 U		
Aroclor 1232 in mg/kg			0.035 U		0.036 U		
Aroclor 1242 in mg/kg			0.035 U		0.036 U		
Aroclor 1248 in mg/kg			0.075		0.036 U		
Aroclor 1254 in mg/kg			0.079		0.036 U		
Aroclor 1260 in mg/kg			0.045		0.036 U		
Total PCBs in mg/kg	1	10	0.269		0.126 U		

Table 7-7C - Groundwater Metals and Conventionals Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AA-MW01 09/29/09 RI	AA-MW01 03/30/10 RI	AA-MW02 10/01/09 RI	AA-MW02 04/01/10 RI	AA-MW03 09/29/09 RI	AA-MW03 03/30/10 RI	AA-MW04 09/29/09 RI	AA-MW04 03/30/10 RI
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5	0.11 J	0.3 U	0.1 J	0.2 U	0.87	0.4 U	4.73	48
Dissolved Cadmium in ug/L	8.8	8.8	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.09	1,650	74.3
Dissolved Chromium (III) in ug/L										
Dissolved Chromium (Total) in ug/L	260	260	0.38	0.42	5.04	3.37	12.4	12.4	19.4	6.96
Dissolved Chromium (VI) in ug/L	50	50	18 J	50 U	50 U	50 U	50 U	50 U	6 J	50 U
Dissolved Copper in ug/L	3.1	3.1	0.3	0.58	0.67	0.68	0.99	1.09	2.78	179
Dissolved Lead in ug/L	8.1	8.1	0.02 U	0.05	0.02 U	0.027	0.02 U	0.085	0.555	0.426
Dissolved Mercury in ug/L	0.059	0.059	0.001 U	0.00024 J	0.001 U	0.00029 J	0.001 U	0.00086 J	0.0018	0.00342
Dissolved Nickel in ug/L	8.2	8.2	0.84	1.62	2.18	2.3	3.01	7.37	1,560	108
Dissolved Zinc in ug/L	81	81	0.5 U	0.5 U	0.4 J	0.6 J	32.3	23.6	7,420	836
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3			268	254	453	431	2 U		2 U	2 U
Bromide in mg/L			0.1 U		0.08 J		0.08 J		0.08 J	
Chloride in mg/L			14.5	11.5	23	14.4	18		23.9	13.1
Dissolved Calcium in mg/L			70.8	97.6	190	148	125		399	296
Dissolved Iron in mg/L			0.326	2.21		0.155	19.6	13.5	62.6	33.3
Dissolved Magnesium in mg/L			10.3	14.5	37.3 J	30.2	13.9		31.2	8.49
Dissolved Manganese in mg/L	0.1	0.1	0.255	0.673		0.213	0.813	0.462	1.67	0.385
Dissolved Potassium in mg/L			16.1	14.4	17.2	17	5.02		7.44	4.41
Dissolved Sodium in mg/L			66.4	69.7	40.7	41.6	168		49.3	88.2
Fluoride in mg/L			0.08 J		0.09 J		0.282 J		2.6	
Formaldehyde in ug/L	1,600	1,600								
Nitrate + Nitrite in mg/L										
Nitrate as Nitrogen in mg/L			0.1 U		0.1 UJ		0.5 U		1 U	
Nitrite as Nitrogen in mg/L			0.1 U		0.1 U		0.5 U		1 U	
Sulfate in mg/L			103	196	254	118	697		1,420	929
Sulfide in mg/L			0.357	0.069	0.624	0.289	0.301		0.245	0.047
Total Dissolved Solids in mg/L			469	567	911	725	1,250		2,390	1,550
Total Suspended Solids in mg/L										
Field Parameters										
Conductivity in us/cm			746	848	1,337	984	1,581	1,661	2,345	1,716
Dissolved Oxygen in mg/L			1.2	0.47	0.58	0.72	0.86	0.92	1.23	0.38
Eh (ORP) in mVolts			-353.7	-112.7	-335.1	-239.1	-268	69.9	-164	277.9
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.56	6.92	7.23	7.24	5.06	4.87	4.18	4.49
Practical Salinity (Calculated) in PSU			0.4	0.4	0.7	0.5	0.8	0.8	1.2	0.9
Temperature in deg C			18.45	12.8	15.13	12.39	15.94	11.26	15.35	11.12
Turbidity in NTU			10	10	10	10	10	10	10	20

Note: Groundwater organics data for wells in Bunker C Tank Subarea are presented in Tables 7-6B and 7-6C (metals data from those wells included in this table).

Table 7-7C - Groundwater Metals and Conventionals Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW01 07/27/04 Pre-RI	BC-MW01 04/01/10 RI	BC-MW01 12/15/10 RI	BC-MW02 10/01/09 RI	BC-MW02 10/01/09 Field Dup RI	BC-MW02 04/01/10 RI	BC-MW02 04/01/10 Field Dup RI	BC-MW02 12/15/10 RI
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5	2.7	1.5 J		10 R	5.2 R	0.66 U	0.61 U	
Dissolved Cadmium in ug/L	8.8	8.8	0.5 U	0.04		1.5 R	1.4 R	0.012 U	0.016 U	
Dissolved Chromium (III) in ug/L			5.00							
Dissolved Chromium (Total) in ug/L	260	260	5	1.29		1.1 R	0.6 R	3.03	2.3	
Dissolved Chromium (VI) in ug/L	50	50	112 U	50 U		50 U	50 U	50 U	50 U	
Dissolved Copper in ug/L	3.1	3.1	1 U	2.4		12.7 R	11 R	0.232 J	0.121 J	
Dissolved Lead in ug/L	8.1	8.1	2 U	0.123		412 R	334 R	0.045 U	0.1 U	
Dissolved Mercury in ug/L	0.059	0.059	0.1 U	0.00175		0.001 U	0.00044 J	0.00058 J	0.00036 J	
Dissolved Nickel in ug/L	8.2	8.2	2	3.72		32.4 R	30.1 R	0.1 J	0.47 J	
Dissolved Zinc in ug/L	81	81	10 U	0.9 J		208 R	195 R	1.18 U	0.69 U	
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3										
Bromide in mg/L										
Chloride in mg/L										
Dissolved Calcium in mg/L						241 R	236 R			
Dissolved Iron in mg/L			0.19	0.188		0.554 R	0.566 R	0.099 J		
Dissolved Magnesium in mg/L						999 R	995 R			
Dissolved Manganese in mg/L	0.1	0.1	0.229	0.316		0.204 R	0.201 R	0.884		
Dissolved Potassium in mg/L						291 R	288 R			
Dissolved Sodium in mg/L						8,590 R	8,550 R			
Fluoride in mg/L										
Formaldehyde in ug/L	1,600	1,600	6 U							
Nitrate + Nitrite in mg/L			0.312							
Nitrate as Nitrogen in mg/L			0.134							
Nitrite as Nitrogen in mg/L			0.178							
Sulfate in mg/L			39.7							
Sulfide in mg/L										
Total Dissolved Solids in mg/L										
Total Suspended Solids in mg/L			6,580	790	5 U	11.5	16.5	14	11.5	5 U
Field Parameters										
Conductivity in us/cm			1,168	444	409	40,700		26,660		23,420
Dissolved Oxygen in mg/L			0.77	1.07	1.59	4.31		0.45		0.87
Eh (ORP) in mVolts			-124.6	-198.8	-6.4	-264.9		-296.7		-284.4
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.45	6.82	6.18	6.56		6.69		6.77
Practical Salinity (Calculated) in PSU			0.6	0.2		25.6		16.1		
Temperature in deg C			22.31	10.79	10.83	15.9		9.94		10.53
Turbidity in NTU			>1000		10	10		10		

Note: Groundwater organics data for wells in Bunker C Tank Subarea are presented in Tables 7-6B and 7-6C (metals data from those wells included in this table).

Table 7-7C - Groundwater Metals and Conventionals Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	BC-MW03 09/28/09 RI	BC-MW03 04/01/10 RI	BC-MW03 12/16/10 RI	FH-MW01 07/25/04 Pre-RI	FH-MW01 09/29/09 RI	FH-MW01 03/30/10 RI	GF-MW01 07/25/04 Pre-RI	GF-MW01 09/29/09 RI
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5		0.15 U		2	2.72	0.5 U	1 U	4.77
Dissolved Cadmium in ug/L	8.8	8.8		0.014 U		0.2 U	0.039 U	0.443	0.2 U	0.842
Dissolved Chromium (III) in ug/L						12.8			10.4	
Dissolved Chromium (Total) in ug/L	260	260		1.66		12.8	8.66	8.26	10.4	3.2
Dissolved Chromium (VI) in ug/L	50	50		50 U		11 U	50 U	50 U	11 U	5 J
Dissolved Copper in ug/L	3.1	3.1		0.14 J		0.8	1.55	1.55	0.9	0.61
Dissolved Lead in ug/L	8.1	8.1		0.1 U		1 U	0.078	0.058	1 U	0.04 U
Dissolved Mercury in ug/L	0.059	0.059		0.00021 J		0.1 U	0.00134 U	0.00032 J	0.1 U	0.001 U
Dissolved Nickel in ug/L	8.2	8.2		1.67 U		405	209	459	1.6	2.42
Dissolved Zinc in ug/L	81	81		0.47 U		760	616	1,130	4 U	3.73
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3							2 U	2 U		
Bromide in mg/L							1 U			
Chloride in mg/L							11.6	22.8		
Dissolved Calcium in mg/L							193	200		
Dissolved Iron in mg/L				0.116		91.8	101	59.4	0.78	0.0383
Dissolved Magnesium in mg/L							49.3	32.1		
Dissolved Manganese in mg/L	0.1	0.1		0.49		3.9	3.02	1.6	0.516	1
Dissolved Potassium in mg/L							3.78	3.1		
Dissolved Sodium in mg/L							142	93.2		
Fluoride in mg/L							0.84 J			
Formaldehyde in ug/L	1,600	1,600				6 U			38 J	
Nitrate + Nitrite in mg/L						0.149			0.100 UJ	
Nitrate as Nitrogen in mg/L						0.149	1 U		0.100 UJ	
Nitrite as Nitrogen in mg/L						0.010 U	1 U		0.100 UJ	
Sulfate in mg/L						1,380	1,170	865	52.3	
Sulfide in mg/L							18.7	0.005 U		
Total Dissolved Solids in mg/L							1,980	1,540		
Total Suspended Solids in mg/L			12.5	30	5 U	2.2			1 U	
Field Parameters										
Conductivity in us/cm			1,224	1,246	11,170	2,305	2,132	1,613	3,901	9,390
Dissolved Oxygen in mg/L			0.31	0.96	0.36	0.73	0.82	0.45	0.98	0.89
Eh (ORP) in mVolts			-39.2	-279.5	-291	261.3	-158.6	71.6	-186.6	-302.1
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.79	7.95	8.02	4.11	4.36	4.64	6.76	6.63
Practical Salinity (Calculated) in PSU			0.6	0.6		1.2	1.1	0.8	2.0	5.2
Temperature in deg C			17.09	10.92	11.84	20.39	16.53	11.22	18.72	17.66
Turbidity in NTU			10	10	10	3.22	10	10	10.4	10

Note: Groundwater organics data for wells in Bunker C Tank Subarea are presented in Tables 7-6B and 7-6C (metals data from those wells included in this table).

Table 7-7C - Groundwater Metals and Conventionals Data for Acid Plant Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	GF-MW01 03/30/10 RI	GF-MW02 07/25/04 Pre-RI	LB-MW01 07/27/04 Pre-RI	LB-MW01 10/01/09 RI	LB-MW01 04/01/10 RI
Dissolved Metals							
Dissolved Arsenic in ug/L	5	5	1.67 U	38	0.5 U	0.45 U	0.4 U
Dissolved Cadmium in ug/L	8.8	8.8	0.012 U	81.1	0.5 U	0.013 U	0.02 U
Dissolved Chromium (III) in ug/L				0.00	5.00		
Dissolved Chromium (Total) in ug/L	260	260	1.27	35.6	5	14.5	2.83
Dissolved Chromium (VI) in ug/L	50	50	36 J	45	11 U	50 U	50 U
Dissolved Copper in ug/L	3.1	3.1	0.121 J	795	1 U	1.4	0.79
Dissolved Lead in ug/L	8.1	8.1	0.1 U	750	2 U	0.112	0.053
Dissolved Mercury in ug/L	0.059	0.059	0.00014 J	0.1 U	0.1 U	0.00934	0.00065 J
Dissolved Nickel in ug/L	8.2	8.2	1.67 U	626	1 U	0.86	2
Dissolved Zinc in ug/L	81	81	0.32 U	2,440	10 U	0.72	0.6 J
Conventional Chemistry Parameters (including other metals)							
Alkalinity (Total) in mg/L as CaCO3							
Bromide in mg/L							
Chloride in mg/L							
Dissolved Calcium in mg/L						141	
Dissolved Iron in mg/L			0.1 U	125	0.12	0.0292	0.019 U
Dissolved Magnesium in mg/L						10.9	
Dissolved Manganese in mg/L	0.1	0.1	1.21	1.87	0.477	0.468	0.392
Dissolved Potassium in mg/L						7.68	
Dissolved Sodium in mg/L						67	
Fluoride in mg/L							
Formaldehyde in ug/L	1,600	1,600		18 U	9		
Nitrate + Nitrite in mg/L				0.200 U	0.100 U		
Nitrate as Nitrogen in mg/L				0.200 U	0.100 U		
Nitrite as Nitrogen in mg/L				0.063	0.100 U		
Sulfate in mg/L				1,640	221		
Sulfide in mg/L							
Total Dissolved Solids in mg/L							
Total Suspended Solids in mg/L				25.2	2.8		
Field Parameters							
Conductivity in us/cm			10,550	2,442	858	1,001	702
Dissolved Oxygen in mg/L			1.78	1.55	0.86	0.61	0.95
Eh (ORP) in mVolts			-176.9	393.7	-294.8	-379.1	-250.6
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.54	3.34	6.60	6.79	6.84
Practical Salinity (Calculated) in PSU			5.9	1.2	0.4	0.5	0.3
Temperature in deg C			12.43	18.87	20.00	18.3	11.38
Turbidity in NTU			10	5.41	6.44	10	10

Note: Groundwater organics data for wells in Bunker C Tank Subarea are presented in Tables 7-6B and 7-6C (metals data from those wells included in this table).

Table 7-8A - Soil VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB09 (1-2 ft) 9/15/09 RI	LP-SB09 (3.5-4.5 ft) 9/15/09 RI	LP-SB09 (8-9 ft) 9/15/09 RI	LP-SB10 (1-2 ft) 9/15/09 RI	LP-SB10 (4-5 ft) 9/15/09 RI	LP-SB10 (7-8 ft) 9/15/09 RI	LP-SB11 (1-2 ft) 9/15/09 RI	LP-SB11 (4-5 ft) 9/15/09 RI
Volatile Organic Compounds (VOC)										
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,1,1-Trichloroethane in mg/kg	28	63	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0012 J	0.013 J
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,1,2-Trichloroethane in mg/kg	0.012	0.024	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,1-Dichloroethane in mg/kg	2.6	5.7	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,1-Dichloroethene in mg/kg	0.005	0.005	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,1-Dichloropropene in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,2,3-Trichlorobenzene in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
1,2,3-Trichloropropane in mg/kg	0.033	4.4	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
1,2,4-Trimethylbenzene in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.00073 J	0.017 U	0.00046 J	0.002 J
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,2-Dichloropropane in mg/kg	0.016	0.016	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,3,5-Trimethylbenzene in mg/kg	800	35,000	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.00067 J
1,3-Dichlorobenzene in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,3-Dichloropropane in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
2,2-Dichloropropane in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
2-Butanone in mg/kg	48,000	2,100,000	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.0037 J
2-Chlorotoluene in mg/kg	1,600	70,000	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
2-Hexanone in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
4-Chlorotoluene in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
4-Methyl-2-pentanone in mg/kg	6,400	280,000	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
Acetone in mg/kg	72,000	3,200,000	17 J	17 U	0.1 J	0.015 U	15 U	17 U	0.019 U	0.038 U
Benzene in mg/kg	0.005	0.031	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.00025 J	0.00035 J	0.0012 J
Bromobenzene in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Bromochloromethane in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Bromodichloromethane in mg/kg	0.005	0.005	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Bromoform in mg/kg	0.33	0.33	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Bromomethane in mg/kg	0.0056	0.012	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Carbon disulfide in mg/kg	0.41	0.89	0.0042 UJ	0.0031 J	0.0034 J	0.0051 J	0.022	0.0099	0.0029 UJ	0.0067 J
Carbon tetrachloride in mg/kg	0.005	0.005	0.00076 J	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Chlorobenzene in mg/kg	0.38	0.84	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Chloroethane in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ

Table 7-8A - Soil VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB09 (1-2 ft) 9/15/09 RI	LP-SB09 (3.5-4.5 ft) 9/15/09 RI	LP-SB09 (8-9 ft) 9/15/09 RI	LP-SB10 (1-2 ft) 9/15/09 RI	LP-SB10 (4-5 ft) 9/15/09 RI	LP-SB10 (7-8 ft) 9/15/09 RI	LP-SB11 (1-2 ft) 9/15/09 RI	LP-SB11 (4-5 ft) 9/15/09 RI
Chloroform in mg/kg	0.005	0.014	0.00076 J	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.001 J
Chloromethane in mg/kg	0.005	0.02	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
cis-1,3-Dichloropropene in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Dibromochloromethane in mg/kg	0.005	0.005	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Dibromomethane in mg/kg	800	35,000	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Dichlorodifluoromethane in mg/kg	16,000	700,000	0.0042 UJ	0.00048 J	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Ethylbenzene in mg/kg	7.3	7.3	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0005 J	0.00062 J	0.0042 U	0.00076 J	0.022 J
Hexachlorobutadiene in mg/kg	0.17	0.17	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
Isopropylbenzene in mg/kg	8,000	350,000	0.017 UJ	0.017 UJ	0.025 UJ	0.00044 J	0.00074 J	0.00046 J	0.012 UJ	0.00062 J
Methylene chloride in mg/kg	0.042	0.26	8.4 U	11 U	13 U	7 U	7.2 U	8.4 U	5.7 U	6.9 U
n-Butylbenzene in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
n-Propylbenzene in mg/kg	8,000	350,000	0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.00045 J
p-Isopropyltoluene in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
sec-Butylbenzene in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
Styrene in mg/kg	1.2	12	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
tert-Butylbenzene in mg/kg			0.017 UJ	0.017 UJ	0.025 UJ	0.014 UJ	0.015 U	0.017 U	0.012 UJ	0.014 UJ
Tetrachloroethene (PCE) in mg/kg	0.015	0.015	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.02 J	0.081 J
Toluene in mg/kg	18	18	0.0041 J	0.0028 J	0.00078 J	0.0038 J	0.0083	0.002 J	0.013 J	0.032 J
trans-1,2-Dichloroethene in mg/kg	0.12	0.26	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
trans-1,3-Dichloropropene in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Trichloroethene (TCE) in mg/kg	0.005	0.015	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Trichlorofluoromethane in mg/kg	24,000	1,100,000	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
Vinyl chloride in mg/kg	0.005	0.005	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0036 U	0.0042 U	0.0029 UJ	0.0035 UJ
m,p-Xylenes in mg/kg			0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.0007 J	0.0042 U	0.0016 J	0.085 J
o-Xylene in mg/kg	1.8	4	0.0042 UJ	0.0042 UJ	0.0061 UJ	0.0035 UJ	0.00031 J	0.0042 U	0.00061 J	0.028 J
Naphthalene in mg/kg	1.6	1.6	0.017 UJ	0.017 UJ	0.025 UJ	14 U	0.19	17 U	12 U	14 U

Table 7-8A - Soil VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB11 (8-9 ft) 9/15/09 RI	LP-SB12 (1-2 ft) 9/15/09 RI	LP-SB12 (4-5 ft) 9/15/09 RI	LP-SB12 (7-8 ft) 9/15/09 RI	LP-SB13 (1-2 ft) 9/15/09 RI	LP-SB13 (4-5 ft) 9/15/09 RI	LP-SB13 (7-8 ft) 9/15/09 RI	LP-SB14 (1-2 ft) 9/15/09 RI
Volatile Organic Compounds (VOC)										
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,1,1-Trichloroethane in mg/kg	28	63	0.0049 U	0.00042 J	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062	0.0049 UJ	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 UJ	0.0039 U	0.00096 J	0.0035 UJ
1,1,2-Trichloroethane in mg/kg	0.012	0.024	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,1-Dichloroethane in mg/kg	2.6	5.7	0.0049 U	0.0026 J	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,1-Dichloroethene in mg/kg	0.005	0.005	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,1-Dichloropropene in mg/kg			0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,2,3-Trichlorobenzene in mg/kg			0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
1,2,3-Trichloropropane in mg/kg	0.033	4.4	0.0049 UJ	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 UJ	0.0039 U	0.0061 U	0.0035 UJ
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
1,2,4-Trimethylbenzene in mg/kg			0.0003 J	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160	0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02	0.02 U	0.012 UJ	0.014 UJ	0.017 U	0.016 U	0.016 U	0.025 U	0.014 UJ
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.0049 UJ	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 UJ	0.0039 U	0.0061 U	0.0035 UJ
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,2-Dichloropropane in mg/kg	0.016	0.016	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,3,5-Trimethylbenzene in mg/kg	800	35,000	0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
1,3-Dichlorobenzene in mg/kg			0.0049 UJ	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 UJ	0.0039 U	0.0061 U	0.0035 UJ
1,3-Dichloropropane in mg/kg			0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.0049 UJ	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 UJ	0.0039 U	0.0061 U	0.0035 UJ
2,2-Dichloropropane in mg/kg			0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
2-Butanone in mg/kg	48,000	2,100,000	0.02 U	0.0034 J	0.014 U	0.017 U	0.016 U	0.016 U	0.017 J	0.014 UJ
2-Chlorotoluene in mg/kg	1,600	70,000	0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
2-Hexanone in mg/kg			0.02 U	0.012 UJ	0.014 UJ	0.017 U	0.016 U	0.016 U	0.025 U	0.014 UJ
4-Chlorotoluene in mg/kg			0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
4-Methyl-2-pentanone in mg/kg	6,400	280,000	0.02 U	0.012 U	0.014 U	0.017 U	0.016 U	0.016 U	0.025 U	0.014 UJ
Acetone in mg/kg	72,000	3,200,000	20 U	0.056	0.017 U	17 U	16 U	16 U	0.085	14 U
Benzene in mg/kg	0.005	0.031	0.00029 J	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.00029 J	0.0035 UJ
Bromobenzene in mg/kg			0.0049 UJ	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 UJ	0.0039 U	0.0061 U	0.0035 UJ
Bromochloromethane in mg/kg			0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Bromodichloromethane in mg/kg	0.005	0.005	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Bromoform in mg/kg	0.33	0.33	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Bromomethane in mg/kg	0.0056	0.012	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Carbon disulfide in mg/kg	0.41	0.89	0.0083	0.0021 J	0.0019 J	0.002 J	0.0038 U	0.0033 J	0.027	0.0035 UJ
Carbon tetrachloride in mg/kg	0.005	0.005	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Chlorobenzene in mg/kg	0.38	0.84	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Chloroethane in mg/kg			0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ

Table 7-8A - Soil VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB11 (8-9 ft) 9/15/09 RI	LP-SB12 (1-2 ft) 9/15/09 RI	LP-SB12 (4-5 ft) 9/15/09 RI	LP-SB12 (7-8 ft) 9/15/09 RI	LP-SB13 (1-2 ft) 9/15/09 RI	LP-SB13 (4-5 ft) 9/15/09 RI	LP-SB13 (7-8 ft) 9/15/09 RI	LP-SB14 (1-2 ft) 9/15/09 RI
Chloroform in mg/kg	0.005	0.014	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Chloromethane in mg/kg	0.005	0.02	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
cis-1,3-Dichloropropene in mg/kg			0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Dibromochloromethane in mg/kg	0.005	0.005	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Dibromomethane in mg/kg	800	35,000	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Dichlorodifluoromethane in mg/kg	16,000	700,000	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Ethylbenzene in mg/kg	7.3	7.3	0.00055 J	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0033 J	0.0061 U	0.0035 UJ
Hexachlorobutadiene in mg/kg	0.17	0.17	0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
Isopropylbenzene in mg/kg	8,000	350,000	0.0011 J	0.012 UJ	0.014 UJ	0.017 U	0.016 U	0.016 U	0.025 U	0.014 UJ
Methylene chloride in mg/kg	0.042	0.26	9.8 U	5.8 U	6.6 U	8.3 U	7.6 U	7.7 U	13 U	6.9 U
n-Butylbenzene in mg/kg			0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
n-Propylbenzene in mg/kg	8,000	350,000	0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
p-Isopropyltoluene in mg/kg			0.00033 J	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
sec-Butylbenzene in mg/kg			0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
Styrene in mg/kg	1.2	12	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
tert-Butylbenzene in mg/kg			0.02 UJ	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ
Tetrachloroethene (PCE) in mg/kg	0.015	0.015	0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.00092 J
Toluene in mg/kg	18	18	0.003 J	0.002 J	0.0003 J	0.00037 J	0.0062	0.0071	0.0021 J	0.0038 J
trans-1,2-Dichloroethene in mg/kg	0.12	0.26	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
trans-1,3-Dichloropropene in mg/kg			0.0049 U	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Trichloroethene (TCE) in mg/kg	0.005	0.015	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Trichlorofluoromethane in mg/kg	24,000	1,100,000	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
Vinyl chloride in mg/kg	0.005	0.005	0.0049 U	0.0029 U	0.0033 U	0.0042 U	0.0038 U	0.0039 U	0.0061 U	0.0035 UJ
m,p-Xylenes in mg/kg			0.00042 J	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.012	0.0061 U	0.0035 UJ
o-Xylene in mg/kg	1.8	4	0.00031 J	0.0029 UJ	0.0033 UJ	0.0042 U	0.0038 U	0.0045	0.0061 U	0.0035 UJ
Naphthalene in mg/kg	1.6	1.6	20 U	0.012 UJ	0.014 UJ	0.017 U	0.016 UJ	0.016 U	0.025 U	0.014 UJ

Table 7-8A - Soil VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB14 (5-6 ft) 9/15/09 RI		LP-SB14 (9-10 ft) 9/15/09 RI	
Volatile Organic Compounds (VOC)						
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000	0.0042	U	0.0034	U
1,1,1-Trichloroethane in mg/kg	28	63	0.0042	U	0.0034	U
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062	0.0042	U	0.0034	U
1,1,2-Trichloroethane in mg/kg	0.012	0.024	0.0042	U	0.0034	U
1,1-Dichloroethane in mg/kg	2.6	5.7	0.0042	U	0.00022	J
1,1-Dichloroethene in mg/kg	0.005	0.005	0.0042	U	0.0034	U
1,1-Dichloropropene in mg/kg			0.0042	U	0.0034	U
1,2,3-Trichlorobenzene in mg/kg			0.017	U	0.014	U
1,2,3-Trichloropropane in mg/kg	0.033	4.4	0.0042	U	0.0034	U
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.017	U	0.014	U
1,2,4-Trimethylbenzene in mg/kg			0.017	U	0.014	U
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160	0.017	U	0.014	U
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02	0.017	U	0.014	U
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.0042	U	0.0034	U
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033	0.0042	U	0.0034	U
1,2-Dichloropropane in mg/kg	0.016	0.016	0.0042	U	0.0034	U
1,3,5-Trimethylbenzene in mg/kg	800	35,000	0.017	U	0.014	U
1,3-Dichlorobenzene in mg/kg			0.0042	U	0.0034	U
1,3-Dichloropropane in mg/kg			0.0042	U	0.0034	U
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.0042	U	0.0034	U
2,2-Dichloropropane in mg/kg			0.0042	U	0.0034	U
2-Butanone in mg/kg	48,000	2,100,000	0.017	U	0.014	U
2-Chlorotoluene in mg/kg	1,600	70,000	0.017	U	0.014	U
2-Hexanone in mg/kg			0.017	U	0.014	U
4-Chlorotoluene in mg/kg			0.017	U	0.014	U
4-Methyl-2-pentanone in mg/kg	6,400	280,000	0.017	U	0.014	U
Acetone in mg/kg	72,000	3,200,000	17	U	14	U
Benzene in mg/kg	0.005	0.031	0.0042	U	0.0034	U
Bromobenzene in mg/kg			0.0042	U	0.0034	U
Bromochloromethane in mg/kg			0.0042	U	0.0034	U
Bromodichloromethane in mg/kg	0.005	0.005	0.0042	U	0.0034	U
Bromoform in mg/kg	0.33	0.33	0.0042	U	0.0034	U
Bromomethane in mg/kg	0.0056	0.012	0.0042	U	0.0034	U
Carbon disulfide in mg/kg	0.41	0.89	0.0021	J	0.0083	
Carbon tetrachloride in mg/kg	0.005	0.005	0.0042	U	0.0034	U
Chlorobenzene in mg/kg	0.38	0.84	0.0042	U	0.0034	U
Chloroethane in mg/kg			0.0042	U	0.0034	U

Table 7-8A - Soil VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB14 (5-6 ft) 9/15/09 RI		LP-SB14 (9-10 ft) 9/15/09 RI	
Chloroform in mg/kg	0.005	0.014	0.0042	U	0.0034	U
Chloromethane in mg/kg	0.005	0.02	0.0042	U	0.0034	U
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3	0.0042	U	0.0034	U
cis-1,3-Dichloropropene in mg/kg			0.0042	U	0.0034	U
Dibromochloromethane in mg/kg	0.005	0.005	0.0042	U	0.0034	U
Dibromomethane in mg/kg	800	35,000	0.0042	U	0.0034	U
Dichlorodifluoromethane in mg/kg	16,000	700,000	0.0042	U	0.0034	U
Ethylbenzene in mg/kg	7.3	7.3	0.0042	U	0.0034	U
Hexachlorobutadiene in mg/kg	0.17	0.17	0.017	U	0.014	U
Isopropylbenzene in mg/kg	8,000	350,000	0.017	U	0.014	U
Methylene chloride in mg/kg	0.042	0.26	8.3	U	6.7	U
n-Butylbenzene in mg/kg			0.017	U	0.014	U
n-Propylbenzene in mg/kg	8,000	350,000	0.017	U	0.014	U
p-Isopropyltoluene in mg/kg			0.017	U	0.014	U
sec-Butylbenzene in mg/kg			0.017	U	0.014	U
Styrene in mg/kg	1.2	12	0.00055	J	0.0034	U
tert-Butylbenzene in mg/kg			0.017	U	0.014	U
Tetrachloroethene (PCE) in mg/kg	0.015	0.015	0.0042	U	0.0034	U
Toluene in mg/kg	18	18	0.0043		0.0014	J
trans-1,2-Dichloroethene in mg/kg	0.12	0.26	0.0042	U	0.0034	U
trans-1,3-Dichloropropene in mg/kg			0.0042	U	0.0034	U
Trichloroethene (TCE) in mg/kg	0.005	0.015	0.0042	U	0.0034	U
Trichlorofluoromethane in mg/kg	24,000	1,100,000	0.0042	U	0.0034	U
Vinyl chloride in mg/kg	0.005	0.005	0.0042	U	0.0034	U
m,p-Xylenes in mg/kg			0.0042	U	0.0034	U
o-Xylene in mg/kg	1.8	4	0.0042	U	0.0034	U
Naphthalene in mg/kg	1.6	1.6	0.017	U	0.014	U

Table 7-8B - Soil Chemistry Data (non-VOC) for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-MW01 (0.5-2 ft) 7/15/04 Pre-RI	LP-MW01 (5-6.5 ft) 7/15/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)				
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	56	6.9
Oil Range Hydrocarbons in mg/kg	2,000	2,000	620	45
Total TPHs in mg/kg	2,000	2,000	676	51.9
Heavy Metals				
Arsenic in mg/kg	7	7	5 U	6 U
Cadmium in mg/kg	1	1	0.2 UJ	0.3 J
Chromium (Total) in mg/kg	260	260	382	304
Chromium (VI) in mg/kg	48	48	0.110 U	0.122 U
Copper in mg/kg	36	36	29.1 J	32.9 J
Lead in mg/kg	81	81	15	8
Mercury in mg/kg	0.1	0.1	0.10	1.17
Nickel in mg/kg	48	48	37	35
Zinc in mg/kg	85	85	63.3	56.7
Polycyclic Aromatic Hydrocarbons (PAHs)				
Acenaphthene in mg/kg	0.26	0.26	0.021 U	0.0078 U
Acenaphthylene in mg/kg			0.021 U	0.0078 U
Anthracene in mg/kg	3.5	3.5	0.021 U	0.0085
Benzo(g,h,i)perylene in mg/kg			0.021 U	0.013
Fluoranthene in mg/kg	2.6	2.6	0.021 U	0.05
Fluorene in mg/kg	0.37	0.37	0.021 U	0.0078 U
Phenanthrene in mg/kg			0.021 U	0.012
Pyrene in mg/kg	16	16	0.021 U	0.16
1-Methylnaphthalene in mg/kg	35	4,500	0.021 U	0.0078 U
2-Methylnaphthalene in mg/kg	320	14,000	0.021 U	0.0078 U
Naphthalene in mg/kg	1.6	1.6	0.021 U	0.0085
Total Naphthalenes in mg/kg			ND	0.0163
Benz(a)anthracene in mg/kg	0.12	0.12	0.021 U	0.016
Benzo(a)pyrene in mg/kg	0.14	0.31	0.021 U	0.046
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.021 U	0.063
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.021 U	0.063
Chrysene in mg/kg	0.13	0.13	0.021 U	0.069
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.021 U	0.0078 U
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.021 U	0.012
Total cPAHs TEQ in mg/kg	0.14	0.31	ND	0.0625
Other Semivolatiles				
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.42 U	0.078 U
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.42 U	0.078 U
1,3-Dichlorobenzene in mg/kg			0.42 U	0.078 U
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.42 U	0.078 U
2,4,5-Trichlorophenol in mg/kg	93	93	2.1 U	0.39 U
2,4,6-Trichlorophenol in mg/kg	0.015	0.015	2.1 U	0.39 U
2,4-Dichlorophenol in mg/kg	0.2	0.2	1.3 U	0.23 U
2,4-Dimethylphenol in mg/kg	0.73	0.73	1.3 U	0.23 U
2,4-Dinitrophenol in mg/kg	0.4	0.4	4.2 U	0.78 U
2-Chloronaphthalene in mg/kg	6,400	280,000	0.42 U	0.078 U
2-Chlorophenol in mg/kg	0.24	0.24	0.42 U	0.078 U
2-Methylphenol in mg/kg	4,000	180,000	0.42 U	0.078 U
2-Nitroaniline in mg/kg	800	35,000	2.1 U	0.39 U
2-Nitrophenol in mg/kg			2.1 U	0.39 U
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1	2.1 U	0.39 U
3-Nitroaniline in mg/kg			2.5 U	0.47 U
4,6-Dinitro-2-methylphenol in mg/kg			4.2 U	0.78 U
4-Bromophenyl phenyl ether in mg/kg			0.42 U	0.078 U
4-Chloro-3-methylphenol in mg/kg			0.84 U	0.16 U

Table 7-8B - Soil Chemistry Data (non-VOC) for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-MW01 (0.5-2 ft) 7/15/04 Pre-RI	LP-MW01 (5-6.5 ft) 7/15/04 Pre-RI
4-Chloroaniline in mg/kg	5	660	1.3 U	0.23 U
4-Chlorophenyl phenyl ether in mg/kg			0.42 U	0.078 U
4-Methylphenol in mg/kg	400	18,000	0.42 U	0.078 U
4-Nitroaniline in mg/kg			2.1 U	0.39 U
4-Nitrophenol in mg/kg			2.1 U	0.39 U
Benzoic acid in mg/kg	320,000	14,000,000	4.2 U	0.78 U
Benzyl alcohol in mg/kg	8,000	350,000	2.1 U	0.39 U
Benzyl butyl phthalate in mg/kg	0.079	0.079	0.42 U	0.078 U
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900	0.42 U	0.078 U
Bis(2-chloroethoxy)methane in mg/kg			0.42 U	0.078 U
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01	0.84 U	0.16 U
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8	0.42 U	0.078 U
Carbazole in mg/kg			0.42 U	0.078 U
Dibenzofuran in mg/kg	80	3,500	0.021 U	0.078 U
Diethyl phthalate in mg/kg	1.2	1.2	0.42 U	0.078 U
Dimethyl phthalate in mg/kg			0.42 U	0.078 U
Di-n-butyl phthalate in mg/kg	3.6	3.6	0.42 U	0.078 U
Di-n-octyl phthalate in mg/kg	270	270	0.42 U	0.078 U
Hexachlorobenzene in mg/kg	0.26	0.26	0.42 U	0.078 U
Hexachlorobutadiene in mg/kg	0.17	0.17	0.84 U	0.16 U
Hexachlorocyclopentadiene in mg/kg	480	3,500	2.1 U	0.39 U
Hexachloroethane in mg/kg	0.096	0.096	0.84 U	0.16 U
Isophorone in mg/kg	0.62	0.62	0.42 U	0.078 U
Nitrobenzene in mg/kg	1.5	1.5	0.42 U	0.078 U
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01	0.84 U	0.16 U
N-Nitrosodiphenylamine in mg/kg	0.079	0.079	0.42 U	0.078 U
Pentachlorophenol in mg/kg	0.1	0.1	2.1 U	0.39 U
Phenol in mg/kg	160	160	0.84 U	0.16 U
2,4-Dinitrotoluene in mg/kg	0.01	0.01	2.1 U	0.39 U
2,6-Dinitrotoluene in mg/kg	80	3,500	2.1 U	0.39 U
Total Naphthalenes in mg/kg			ND	0.0163
Conventional Chemistry Parameters (including other metals)				
Formaldehyde in mg/kg	16,000	700,000	49	
Iron in mg/kg	56,000	2,500,000	22,700	22,100
Manganese in mg/kg	11,000	490,000	289	348
pH in pH units	2.5 - 11	2.5 - 11	10.86	9.66

Table 7-8C - Groundwater VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LP-MW01 07/27/04 Pre-RI	LP-MW01 09/01/09 RI	LP-MW01 09/30/09 RI	LP-MW01 03/29/10 RI	LP-MW01 03/30/10 RI	LP-MW01 03/29/10 Field Dup RI	LP-SB09 09/15/09 RI
Volatile Organic Compounds (VOC)									
1,1,1,2-Tetrachloroethane in ug/L	7.4	74	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,1,1-Trichloroethane in ug/L	11,000	25,000	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,1,2 - Trichlorotrifluoroethane in ug/L	1,100	2,400	10 U						
1,1,2,2-Tetrachloroethane in ug/L	4	4	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,1,2-Trichloroethane in ug/L	7.9	16	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,1-Dichloroethane in ug/L	2,300	5,000	5.0 U	6		0.34 J		0.24 J	2.3
1,1-Dichloroethene in ug/L	3.2	3.2	5.0 U	0.29 J		0.5 U		0.5 U	0.5 U
1,1-Dichloropropene in ug/L			5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,2,3-Trichlorobenzene in ug/L			25 U	2 U		2 U		2 U	2 U
1,2,3-Trichloropropane in ug/L			15 U	0.5 U		0.5 U		0.5 U	0.5 U
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	25 U	2 U		2 U		2 U	2 U
1,2,4-Trimethylbenzene in ug/L	24	52	5.0 U	2 U		2 U		2 U	2 U
1,2-Dibromo-3-chloropropane in ug/L			25 U	2 U		2 U		2 U	2 U
1,2-Dibromoethane (EDB) in ug/L	2	7.4	5.0 U	2 U		2 U		2 U	2 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,2-Dichloroethane (EDC) in ug/L	4.2	37	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,2-Dichloropropane in ug/L	15	15	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,3,5-Trimethylbenzene in ug/L	25	54	5.0 U	2 U		2 U		2 U	2 U
1,3-Dichlorobenzene in ug/L	960	960	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,3-Dichloropropane in ug/L			5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
1,4-Dichloro-2-Butene in ug/L			25 U						
1,4-Dichlorobenzene in ug/L	5	5	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
2,2-Dichloropropane in ug/L			5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
2-Butanone in ug/L	350,000	760,000	25 U	20 U		20 U		20 U	20 U
2-Chloroethyl Vinyl Ether in ug/L			25 U						
2-Chlorotoluene in ug/L			5.0 U	2 U		2 U		2 U	2 U
2-Hexanone in ug/L			25 U	20 U		20 U		20 U	20 U
4-Chlorotoluene in ug/L			5.0 U	2 U		2 U		2 U	2 U
4-Methyl-2-pentanone in ug/L	11,000	24,000	25 U	20 U		20 U		20 U	20 U
Acetone in ug/L			25 U	4.2 J		20 U		20 U	4.1 J
Acrolein in ug/L	20	20	250 U						
Acrylonitrile in ug/L	5	5	5.0 U						
Benzene in ug/L	2.4	24	5.0 U	0.25 J		0.5 U		0.5 U	0.08 J
Bromobenzene in ug/L			5.0 U	2 U		2 U		2 U	2 U
Bromochloromethane in ug/L			5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Bromodichloromethane in ug/L	0.5	0.9	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Bromoethane in ug/L			10 U						

Table 7-8C - Groundwater VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LP-MW01 07/27/04 Pre-RI	LP-MW01 09/01/09 RI	LP-MW01 09/30/09 RI	LP-MW01 03/29/10 RI	LP-MW01 03/30/10 RI	LP-MW01 03/29/10 Field Dup RI	LP-SB09 09/15/09 RI
Bromoform in ug/L	140	140	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Bromomethane in ug/L	13	28	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Carbon disulfide in ug/L	400	870	5.0 U	0.5 U		0.5 U		0.5 U	0.35 J
Carbon tetrachloride in ug/L	0.5	1.6	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Chlorobenzene in ug/L	100	220	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Chloroethane in ug/L	12	120	5.0 U	0.5 U		0.5 U		0.5 U	2.1
Chloroform in ug/L	1.2	12	5.0 U	0.5 U		0.2 J		0.2 J	0.5 U
Chloromethane in ug/L	5.2	52	5.0 U	0.11 J		0.08 J		0.07 J	0.82 J
cis-1,2-Dichloroethene (DCE) in ug/L	160	350	12	5.7		0.27 J		0.17 J	0.5 U
cis-1,3-Dichloropropene in ug/L			5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Dibromochloromethane in ug/L	0.5	2.2	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Dibromomethane in ug/L			5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Dichlorodifluoromethane in ug/L	9.9	22		0.5 U		0.5 U		0.5 U	0.5 U
Ethylbenzene in ug/L	2,100	2,100	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Hexachlorobutadiene in ug/L	0.2	0.2	25 U	2 U		2 U		2 U	2 U
Isopropylbenzene in ug/L	720	1,600	5.0 U	2 U		2 U		2 U	2 U
Methylene chloride in ug/L	94	590	10 U	2 U		2 U		2 U	1.8 J
Methyliodide in ug/L			5.0 U						
n-Butylbenzene in ug/L			5.0 U	2 U		2 U		2 U	2 U
n-Propylbenzene in ug/L			5.0 U	2 U		2 U		2 U	2 U
p-Isopropyltoluene in ug/L			5.0 U	2 U		2 U		2 U	2 U
sec-Butylbenzene in ug/L			5.0 U	2 U		2 U		2 U	2 U
Styrene in ug/L	78	780	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
tert-Butylbenzene in ug/L			5.0 U	2 U		2 U		2 U	2 U
Tetrachloroethene (PCE) in ug/L	3.3	3.3	25	1.9		6.5		6.2	0.5 U
Toluene in ug/L	7,300	7,300	5.0 U	0.09 J		0.11 U		0.16 U	0.21 J
trans-1,2-Dichloroethene in ug/L	130	290	5.0 U	0.52		0.5 U		0.5 U	0.5 U
trans-1,3-Dichloropropene in ug/L			5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Trichloroethene (TCE) in ug/L	1.6	8.4	5.4	1.2		0.33 J		0.28 J	0.5 U
Trichlorofluoromethane in ug/L	120	260	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Vinyl acetate in ug/L	7,800	17,000	25 U						
Vinyl chloride in ug/L	0.5	2.4	13	10 J		0.11 J		0.5 U	0.09 J
m,p-Xylenes in ug/L				0.5 U		0.5 U		0.5 U	0.5 U
o-Xylene in ug/L	440	960	5.0 U	0.5 U		0.5 U		0.5 U	0.5 U
Xylenes (total) in ug/L			5.00 U						
Naphthalene in ug/L	83	83	25 U	2 U		2 U		2 U	2 U

Table 7-8C - Groundwater VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LP-SB10 09/15/09 RI	LP-SB11 09/15/09 RI	LP-SB12 09/15/09 RI	LP-SB13 09/15/09 RI	LP-SB14 09/15/09 RI
Volatile Organic Compounds (VOC)							
1,1,1,2-Tetrachloroethane in ug/L	7.4	74	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane in ug/L	11,000	25,000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2 - Trichlorotrifluoroethane in ug/L	1,100	2,400					
1,1,2,2-Tetrachloroethane in ug/L	4	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane in ug/L	7.9	16	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane in ug/L	2,300	5,000	0.5 U	4.1	0.78	0.19 J	0.24 J
1,1-Dichloroethene in ug/L	3.2	3.2	0.5 U	0.37 J	0.5 U	0.5 U	0.5 U
1,1-Dichloropropene in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene in ug/L			2 U	2 U	2 U	2 U	2 U
1,2,3-Trichloropropane in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	2 U	2 U	2 U	2 U	2 U
1,2,4-Trimethylbenzene in ug/L	24	52	0.39 J	0.11 J	0.53 J	2 U	2 U
1,2-Dibromo-3-chloropropane in ug/L			2 U	2 U	2 U	2 U	2 U
1,2-Dibromoethane (EDB) in ug/L	2	7.4	2 U	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene in ug/L	6.1	6.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane (EDC) in ug/L	4.2	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane in ug/L	15	15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3,5-Trimethylbenzene in ug/L	25	54	0.14 J	2 U	2 U	2 U	2 U
1,3-Dichlorobenzene in ug/L	960	960	0.5 U	0.5 U	0.1 J	0.18 J	0.5 U
1,3-Dichloropropane in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichloro-2-Butene in ug/L							
1,4-Dichlorobenzene in ug/L	5	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,2-Dichloropropane in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Butanone in ug/L	350,000	760,000	20 U	20 U	20 U	20 U	48
2-Chloroethyl Vinyl Ether in ug/L							
2-Chlorotoluene in ug/L			2 U	2 U	2 U	2 U	2 U
2-Hexanone in ug/L			20 U	20 U	20 U	20 U	20 U
4-Chlorotoluene in ug/L			2 U	2 U	2 U	2 U	2 U
4-Methyl-2-pentanone in ug/L	11,000	24,000	20 U	20 U	20 U	20 U	20 U
Acetone in ug/L			5.7 J	5.7 J	3.6 J	20 U	20 J
Acrolein in ug/L	20	20					
Acrylonitrile in ug/L	5	5					
Benzene in ug/L	2.4	24	0.15 J	0.32 J	0.16 J	0.09 J	0.14 J
Bromobenzene in ug/L			2 U	2 U	2 U	2 U	2 U
Bromochloromethane in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane in ug/L	0.5	0.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoethane in ug/L							

Table 7-8C - Groundwater VOC Data for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LP-SB10 09/15/09 RI	LP-SB11 09/15/09 RI	LP-SB12 09/15/09 RI	LP-SB13 09/15/09 RI	LP-SB14 09/15/09 RI
Bromoform in ug/L	140	140	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromomethane in ug/L	13	28	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon disulfide in ug/L	400	870	0.28 J	0.57	0.15 J	0.5 U	0.5 U
Carbon tetrachloride in ug/L	0.5	1.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene in ug/L	100	220	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane in ug/L	12	120	0.5 U	0.95	0.5 U	0.5 U	0.5 U
Chloroform in ug/L	1.2	12	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane in ug/L	5.2	52	0.7	1.8	0.5 U	0.07 J	0.07 J
cis-1,2-Dichloroethene (DCE) in ug/L	160	350	0.5 U	0.5 U	0.5 U	0.5 U	0.33 J
cis-1,3-Dichloropropene in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane in ug/L	0.5	2.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane in ug/L	9.9	22	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene in ug/L	2,100	2,100	0.3 J	0.5 U	0.14 J	0.1 J	0.38 J
Hexachlorobutadiene in ug/L	0.2	0.2	2 U	2 U	2 U	2 U	2 U
Isopropylbenzene in ug/L	720	1,600	0.16 J	2 U	2 U	2 U	2 U
Methylene chloride in ug/L	94	590	1.5 J	2.5	2 U	0.25 J	5.7
Methyliodide in ug/L							
n-Butylbenzene in ug/L			2 U	2 U	2 U	2 U	2 U
n-Propylbenzene in ug/L			2 U	2 U	2 U	2 U	2 U
p-Isopropyltoluene in ug/L			0.12 J	2 U	0.06 J	2 U	2 U
sec-Butylbenzene in ug/L			2 U	2 U	2 U	2 U	2 U
Styrene in ug/L	78	780	0.5 U	0.5 U	0.5 U	0.5 U	1.7
tert-Butylbenzene in ug/L			2 U	2 U	2 U	2 U	2 U
Tetrachloroethene (PCE) in ug/L	3.3	3.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene in ug/L	7,300	7,300	0.51	0.15 J	0.21 J	0.38 J	0.06 J
trans-1,2-Dichloroethene in ug/L	130	290	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene in ug/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene (TCE) in ug/L	1.6	8.4	0.5 U	0.11 J	0.5 U	0.5 U	0.12 J
Trichlorofluoromethane in ug/L	120	260	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl acetate in ug/L	7,800	17,000					
Vinyl chloride in ug/L	0.5	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m,p-Xylenes in ug/L			0.38 J	0.5 U	0.1 J	0.36 J	0.5 U
o-Xylene in ug/L	440	960	0.3 J	0.5 U	0.45 J	0.15 J	0.5 U
Xylenes (total) in ug/L							
Naphthalene in ug/L	83	83	91	4.8	19	2.1	0.26 J

Table 7-8D - Groundwater Chemistry Data (non-VOC) for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LP-MW01 07/27/04 Pre-RI	LP-MW01 09/30/09 RI	LP-MW01 03/30/10 RI
Total Petroleum Hydrocarbons (TPH)					
Gasoline Range Hydrocarbons in ug/L			250 U		
Diesel Range Hydrocarbons in ug/L			350		
Oil Range Hydrocarbons in ug/L			500 U		
Total TPHs in ug/L			600		
Heavy Metals					
Dissolved Arsenic in ug/L	5	5	14.1	3.18	1.1 J
Dissolved Cadmium in ug/L	8.8	8.8	1.5	0.097	0.061
Dissolved Chromium (III) in ug/L			1,590		
Dissolved Chromium (Total) in ug/L	260	260	1,590	158	71.1
Dissolved Chromium (VI) in ug/L	50	50	11 U	12 J	48 J
Dissolved Copper in ug/L	3.1	3.1	45	3.1	4.41
Dissolved Lead in ug/L	8.1	8.1	15	0.128	0.097
Dissolved Mercury in ug/L	0.059	0.059	1.6	0.0421	0.03
Dissolved Nickel in ug/L	8.2	8.2	7	1.61	1.2
Dissolved Zinc in ug/L	81	81	10	0.56	0.5 U
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene in ug/L	3.3	3.3	1.8		
Acenaphthylene in ug/L			0.10 U		
Anthracene in ug/L	9.6	9.6	0.10 U		
Benzo(g,h,i)perylene in ug/L			0.10 U		
Fluoranthene in ug/L	3.3	3.3	0.59		
Fluorene in ug/L	3	3	0.26		
Phenanthrene in ug/L			0.10 U		
Pyrene in ug/L	15	15	0.70		
1-Methylnaphthalene in ug/L			0.10		
2-Methylnaphthalene in ug/L			0.10 U		
Naphthalene in ug/L	83	83	0.10 U		
Total Naphthalenes in ug/L			0.2		
Benz(a)anthracene in ug/L	0.02	0.02	0.10 U		
Benzo(a)pyrene in ug/L	0.02	0.02	0.10 U		
Benzo(b)fluoranthene in ug/L	0.02	0.02	0.10 U		
Benzo(k)fluoranthene in ug/L	0.02	0.02	0.10 U		
Chrysene in ug/L	0.02	0.02	0.16		
Dibenzo(a,h)anthracene in ug/L	0.02	0.02	0.10 U		
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02	0.10 U		
Total cPAHs TEQ in ug/L	0.02	0.02	0.0766		

Table 7-8D - Groundwater Chemistry Data (non-VOC) for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LP-MW01 07/27/04 Pre-RI	LP-MW01 09/30/09 RI	LP-MW01 03/30/10 RI
Other Semivolatiles					
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	1.0 U		
1,2-Dichlorobenzene in ug/L	6.1	6.1	1.0 U		
1,3-Dichlorobenzene in ug/L	960	960	1.0 U		
1,4-Dichlorobenzene in ug/L	5	5	1.0 U		
2,4,5-Trichlorophenol in ug/L	3,600	3,600	5.0 U		
2,4,6-Trichlorophenol in ug/L	2.4	2.4	5.0 U		
2,4-Dichlorophenol in ug/L	73	73	3.0 U		
2,4-Dimethylphenol in ug/L	200	200	3.0 U		
2,4-Dinitrophenol in ug/L	1,400	1,400	25 U		
2-Chloronaphthalene in ug/L	390	390	1.0 U		
2-Chlorophenol in ug/L	37	37	1.0 U		
2-Methylphenol in ug/L			1.0 U		
2-Nitroaniline in ug/L			5.0 U		
2-Nitrophenol in ug/L			5.0 U		
3,3'-Dichlorobenzidine in ug/L	2	2	5.0 U		
3-Nitroaniline in ug/L			6.0 U		
4,6-Dinitro-2-methylphenol in ug/L			15 U		
4-Bromophenyl phenyl ether in ug/L			1.0 U		
4-Chloro-3-methylphenol in ug/L			2.0 U		
4-Chloroaniline in ug/L			3.0 U		
4-Chlorophenyl phenyl ether in ug/L			1.0 U		
4-Methylphenol in ug/L			1.0 U		
4-Nitroaniline in ug/L			5.0 U		
4-Nitrophenol in ug/L			5.0 U		
Benzoic acid in ug/L			10 U		
Benzyl alcohol in ug/L			5.0 U		
Benzyl butyl phthalate in ug/L	0.35	0.35	1.0 U		
Bis(2-chloro-1-methylethyl) ether in ug/L	14	14	1.0 U		
Bis(2-chloroethoxy)methane in ug/L			1.0 U		
Bis(2-chloroethyl) ether in ug/L	0.53	0.53	2.0 U		
Bis(2-ethylhexyl) phthalate in ug/L	1	1	1.0 U		
Carbazole in ug/L			1.0 U		
Dibenzofuran in ug/L			1.0 U		
Diethyl phthalate in ug/L	740	740	1.0 U		
Dimethyl phthalate in ug/L	1,100,000	1,100,000	1.0 U		
Di-n-butyl phthalate in ug/L	140	140	1.0 U		
Di-n-octyl phthalate in ug/L	0.2	0.2	1.0 U		
Hexachlorobenzene in ug/L	0.2	0.2	1.0 U		
Hexachlorobutadiene in ug/L	0.2	0.2	2.0 U		
Hexachlorocyclopentadiene in ug/L	1,100	1,100	5.0 U		
Hexachloroethane in ug/L	3.3	3.3	2.0 U		
Isophorone in ug/L	600	600	1.0 U		
Nitrobenzene in ug/L	690	690	1.0 U		
N-Nitroso-di-n-propylamine in ug/L	0.32	0.32	2.0 U		
N-Nitrosodiphenylamine in ug/L	3.7	3.7	1.0 U		
Pentachlorophenol in ug/L	3	3	5.0 U		
Phenol in ug/L	216,000	216,000	2.0 U		
2,4-Dinitrotoluene in ug/L	3.4	3.4	5.0 U		
2,6-Dinitrotoluene in ug/L			5.0 U		

Table 7-8D - Groundwater Chemistry Data (non-VOC) for LP-MW01 Subarea

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LP-MW01 07/27/04 Pre-RI	LP-MW01 09/30/09 RI	LP-MW01 03/30/10 RI
Polychlorinated Biphenyls (PCBs)					
Aroclor 1016 in ug/L			0.10 UJ		
Aroclor 1221 in ug/L			0.10 UJ		
Aroclor 1232 in ug/L			0.10 UJ		
Aroclor 1242 in ug/L			0.10 UJ		
Aroclor 1248 in ug/L			0.10 UJ		
Aroclor 1254 in ug/L			0.10 UJ		
Aroclor 1260 in ug/L			0.10 UJ		
Total PCBs in ug/L	0.1	0.1	0.35 UJ		
Conventional Chemistry Parameters (including other metals)					
Dissolved Iron in mg/L			2.21		
Dissolved Manganese in mg/L	0.1	0.1	0.284		
Formaldehyde in ug/L	1,600	1,600	6 U		
Nitrate + Nitrite in mg/L			0.200 U		
Nitrate as Nitrogen in mg/L			0.200 U		
Nitrite as Nitrogen in mg/L			0.200 U		
Sulfate in mg/L			76.7		
Total Suspended Solids in mg/L			4.8		
Field Parameters					
Conductivity in us/cm			863	712	222
Dissolved Oxygen in mg/L			0.73	0.99	3.14
Eh (ORP) in mVolts			-27.4	-289.2	97.6
pH in pH units	6.2 - 8.5	6.2 - 8.5	7.20	7.09	7.79
Practical Salinity (Calculated) in PSU			0.4	0.3	0.1
Temperature in deg C			19.14	19.1	11.39
Turbidity in NTU			17.4	10	10

Table 7-9A - Groundwater Chemistry Data for Miscellaneous Metals Exceedance Wells

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-12S 07/09/93 Pre-RI	EMW-12S 12/10/93 Pre-RI	EMW-12S 07/26/04 Pre-RI	EMW-12S 09/30/09 RI	EMW-12S 03/30/10 RI	EMW-16S 12/16/93 Pre-RI	EMW-16S 07/26/04 Pre-RI
Dissolved Metals									
Dissolved Arsenic in ug/L	5	5			79.6	7.53	4.1		42
Dissolved Cadmium in ug/L	8.8	8.8			0.5 U	0.028	0.009 J		2 U
Dissolved Chromium (III) in ug/L					1,480				4,530
Dissolved Chromium (Total) in ug/L	260	260			1,480	329	98.4		4,750
Dissolved Chromium (VI) in ug/L	50	50			224 U	50 U	5 J		224
Dissolved Copper in ug/L	3.1	3.1			8	1.73	1.34		14
Dissolved Lead in ug/L	8.1	8.1			2 U	0.227	0.211		2 U
Dissolved Mercury in ug/L	0.059	0.059	0.2 U	0.2 U	1 U	0.00268 J	0.00286	0.2 U	1 U
Dissolved Nickel in ug/L	8.2	8.2			9	2.35	2.63		27
Dissolved Zinc in ug/L	81	81			10 U	1.17	1 J		20
Conventional Chemistry Parameters (including other metals)									
Alkalinity (Total) in mg/L as CaCO3				1,000				2,160	
Chloride in mg/L				445				560	
Conductivity in umhos/cm									
Dissolved Calcium in mg/L				280				960	
Dissolved Iron in mg/L					44.2				11.8
Dissolved Magnesium in mg/L				47				200	
Dissolved Manganese in mg/L	0.1	0.1		2.9	5.8			7.2	6.57
Dissolved Potassium in mg/L				18				57	
Dissolved Sodium in mg/L				300				540	
Formaldehyde in ug/L	1,600	1,600			18				17
Nitrate + Nitrite in mg/L					0.500 U				0.500 U
Nitrate as Nitrogen in mg/L					0.500 U				0.500 U
Nitrite as Nitrogen in mg/L					0.500 U				0.500 U
Sulfate in mg/L				100 U	551			100 U	735
Sulfide in mg/L				0.5 U				1.25 U	
Total Organic Carbon in ug/L				76,200				1,420,000	
Total Suspended Solids in mg/L					4.8	5 U	5 U		23
Field Parameters									
Conductivity in us/cm			1,970	2,490	2,858	1,597	955	5,390	5,672
Dissolved Oxygen in mg/L			0.78	1.18	0.83	0.58	0.33	1.4	0.67
Eh (ORP) in mVolts			-87	-127	-189.7	-336.2	-206.5		-224.5
pH in pH units	8.5	8.5	7.1	6.83	6.57	6.67	6.84		6.58
Practical Salinity (Calculated) in PSU			1.0	1.3	1.5	0.8	0.5	2.9	3.0
Temperature in deg C			19.2	13.4	20.44	18.26	12.05	9.7	20.93
Turbidity in NTU					2.9	10	10		

Note: Organics data for these wells presented in other Section 7 tables.

Table 7-9A - Groundwater Chemistry Data for Miscellaneous Metals Exceedance Wells

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	EMW-16S 09/30/09 RI	EMW-16S 03/30/10 RI	LP-MW01 07/27/04 Pre-RI	LP-MW01 09/30/09 RI	LP-MW01 03/30/10 RI	LW-MW01 07/27/04 Pre-RI	LW-MW01 07/27/04 Field Dup Pre-RI	LW-MW01 10/01/09 RI
Dissolved Metals										
Dissolved Arsenic in ug/L	5	5	15.7	0.17 U	14.1	3.18	1.1 J	17	17.0	3.95
Dissolved Cadmium in ug/L	8.8	8.8	0.266	0.067 U	1.5	0.097	0.061	12	11.1	0.074
Dissolved Chromium (III) in ug/L					1,590			1,170	1,110	
Dissolved Chromium (Total) in ug/L	260	260	2,690	3.9	1,590	158	71.1	1,170	1,110	633
Dissolved Chromium (VI) in ug/L	50	50	50 U	50 U	11 U	12 J	48 J	224 U	224 U	50 U
Dissolved Copper in ug/L	3.1	3.1	11.1	0.042 U	45	3.1	4.41	75	78	3.08
Dissolved Lead in ug/L	8.1	8.1	0.462	0.1 U	15	0.128	0.097	34	32	0.132
Dissolved Mercury in ug/L	0.059	0.059	0.0628	0.109	1.6	0.0421	0.03	0.3	0.2	0.00197
Dissolved Nickel in ug/L	8.2	8.2	23.9	1.67 U	7	1.61	1.2	64	63	5.53
Dissolved Zinc in ug/L	81	81	11.1	1.67 U	10	0.56	0.5 U	110	100	4.4
Conventional Chemistry Parameters (including other metals)										
Alkalinity (Total) in mg/L as CaCO3										
Chloride in mg/L										
Conductivity in umhos/cm										
Dissolved Calcium in mg/L										55.9
Dissolved Iron in mg/L					2.21			19.8	20.4	0.311
Dissolved Magnesium in mg/L										5.49
Dissolved Manganese in mg/L	0.1	0.1			0.284			0.381	0.404	0.141
Dissolved Potassium in mg/L										7.25
Dissolved Sodium in mg/L										308
Formaldehyde in ug/L	1,600	1,600			6 U			6 U	7 U	
Nitrate + Nitrite in mg/L					0.200 U			0.500 U	0.500 U	
Nitrate as Nitrogen in mg/L					0.200 U			0.500 U	0.500 U	
Nitrite as Nitrogen in mg/L					0.200 U			0.500 U	0.500 U	
Sulfate in mg/L					76.7			233	216	
Sulfide in mg/L										
Total Organic Carbon in ug/L										
Total Suspended Solids in mg/L			7.5	15.5	4.8			56.2	42.7	
Field Parameters										
Conductivity in us/cm			5,178	5,665	863	712	222	2,850		1,476
Dissolved Oxygen in mg/L			0.44	0.2	0.73	0.99	3.14	1.62		0.43
Eh (ORP) in mVolts			-402	-254.5	-27.4	-289.2	97.6	-418.3		-365.5
pH in pH units	8.5	8.5	6.73	6.66	7.20	7.09	7.79	10.79		8.4
Practical Salinity (Calculated) in PSU			2.7	3.0	0.4	0.3	0.1	1.5		0.7
Temperature in deg C			19.91	11.7	19.14	19.1	11.39	17.52		18
Turbidity in NTU			20	20	17.4	10	10	252		10

Note: Organics data for these wells presented in other Section 7 tables.

Table 7-9A - Groundwater Chemistry Data for Miscellaneous Metals Exceedance Wells

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	LW-MW01 03/30/10 RI	SC-MW02 07/27/04 Pre-RI	SC-MW02 07/27/04 Field Dup Pre-RI	SC-MW02 09/30/09 RI	SC-MW02 04/01/10 RI
Dissolved Metals							
Dissolved Arsenic in ug/L	5	5	2.3	12.2	13.4	2.94	1.67 U
Dissolved Cadmium in ug/L	8.8	8.8	0.047	0.5 U	0.5 U	0.043	0.067 U
Dissolved Chromium (III) in ug/L				29,200	29,500		
Dissolved Chromium (Total) in ug/L	260	260	792	29,200	29,500	6,410	235
Dissolved Chromium (VI) in ug/L	50	50	50 U	224 U	224 U	50 U	50 U
Dissolved Copper in ug/L	3.1	3.1	2.99	17	17	4.78	0.412
Dissolved Lead in ug/L	8.1	8.1	0.133	2 U	2 U	0.202	0.042 U
Dissolved Mercury in ug/L	0.059	0.059	0.00225	1 U	1 U	0.00242 J	0.0058
Dissolved Nickel in ug/L	8.2	8.2	5.11	29	29	8.42	1.67 U
Dissolved Zinc in ug/L	81	81	3.3	20	20	4.13	0.37 U
Conventional Chemistry Parameters (including other metals)							
Alkalinity (Total) in mg/L as CaCO3							
Chloride in mg/L							
Conductivity in umhos/cm							
Dissolved Calcium in mg/L							
Dissolved Iron in mg/L				26	22		
Dissolved Magnesium in mg/L							
Dissolved Manganese in mg/L	0.1	0.1		12.8	11.1		
Dissolved Potassium in mg/L							
Dissolved Sodium in mg/L							
Formaldehyde in ug/L	1,600	1,600		6 U	7 U		
Nitrate + Nitrite in mg/L				0.500 U	0.500 U		
Nitrate as Nitrogen in mg/L				0.500 U	0.500 U		
Nitrite as Nitrogen in mg/L				0.500 U	0.500 U		
Sulfate in mg/L				3,560	3,510		
Sulfide in mg/L							
Total Organic Carbon in ug/L							
Total Suspended Solids in mg/L				86.7	220		
Field Parameters							
Conductivity in us/cm			1,175	6,685		4,137	2,920
Dissolved Oxygen in mg/L			0.6	0.68		0.65	4.58
Eh (ORP) in mVolts			-306.3	-385.2		-496.6	-272
pH in pH units	8.5	8.5	8.94	6.05		6.41	6.56
Practical Salinity (Calculated) in PSU			0.6	3.6		2.2	1.5
Temperature in deg C			11.54	15.28		16.58	10.89
Turbidity in NTU			20	55.8		10	15

Note: Organics data for these wells presented in other Section 7 tables.

Table 7-9B - Soil Chemistry Data for Dioxins/Furans, Site-Wide

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	BC-SB05 (0.5-1.5 ft) 9/22/09 RI	BH-SB01 (0-4 ft) 7/16/04 Pre-RI	BH-SB01 (4-8 ft) 7/16/04 Pre-RI	BH-SB02 (0-4 ft) 7/21/04 Pre-RI	BH-SB02 FD (4-8 ft) 7/21/04 Pre-RI	BH-SB02 (4-8 ft) 7/21/04 Pre-RI	CP-MW03 (4-5 ft) 9/16/09 RI	PR-MW01 (5-6 ft) 9/14/09 RI
Dioxins/Furans										
2,3,7,8-TCDD in mg/kg	1.10E-05	1.50E-03	8.92E-07 U	2.00E-07 U	4.80E-08 U	9.30E-07 U	2.30E-06	2.20E-06	9.44E-07 U	1.08E-06 J
1,2,3,7,8-PeCDD in mg/kg			3.00E-07 J	9.70E-07 U	7.30E-08 U	2.40E-06 U	3.30E-04	2.50E-04	2.36E-06 U	2.38E-06 J
1,2,3,4,7,8-HxCDD in mg/kg			7.03E-07 J	2.00E-06 U	9.00E-08 U	9.30E-06	2.50E-03	1.60E-03	2.36E-06 U	2.01E-06 J
1,2,3,6,7,8-HxCDD in mg/kg			2.10E-06 J	3.30E-06 J	1.10E-07 U	3.40E-05	1.90E-03	1.10E-03	1.26E-06 J	8.00E-06
1,2,3,7,8,9-HxCDD in mg/kg	1.60E-04	2.10E-02	1.56E-06 J	2.40E-06 U	1.10E-07 U	1.20E-05	1.80E-03	8.30E-04	5.85E-07 J	5.21E-06
1,2,3,4,6,7,8-HpCDD in mg/kg			4.67E-05	3.50E-05	6.20E-07 U	8.30E-04	1.30E-02	7.50E-03	1.21E-05 J	1.84E-04
OCDD in mg/kg			3.20E-04 J	1.20E-04	3.00E-06 U	1.10E-02	8.60E-03	6.60E-03	1.04E-04 J	1.93E-03 J
2,3,7,8-TCDF in mg/kg			8.92E-07 U	1.00E-06 J	4.40E-07 U	1.30E-06	6.40E-05	5.20E-05	5.65E-06 J	2.48E-05
1,2,3,7,8-PeCDF in mg/kg			2.23E-06 U	5.20E-07 U	8.30E-08 U	1.20E-06 U	5.70E-05	4.60E-05	8.68E-06 J	1.43E-05
2,3,4,7,8-PeCDF in mg/kg			2.23E-06 U	6.10E-07 U	8.40E-08 U	1.30E-06 U	6.00E-05	5.20E-05	3.34E-06	9.96E-06 J
1,2,3,4,7,8-HxCDF in mg/kg			4.29E-07 J	1.10E-06 U	1.20E-07 U	8.30E-06	8.90E-05	7.20E-05	1.29E-05 J	7.95E-05
1,2,3,6,7,8-HxCDF in mg/kg			2.41E-07 J	4.50E-07 U	4.00E-08 U	3.70E-06 J	4.00E-05	3.80E-05	3.45E-06 J	1.64E-05 J
1,2,3,7,8,9-HxCDF in mg/kg			2.23E-06 U	1.10E-07 U	4.40E-08 U	1.00E-06 U	4.80E-06 J	2.90E-06 U	2.36E-06 J	3.02E-06 U
2,3,4,6,7,8-HxCDF in mg/kg			2.23E-06 U	3.60E-07 U	4.30E-08 U	2.80E-06 J	2.90E-05	2.30E-05	1.44E-06 J	3.09E-06
1,2,3,4,6,7,8-HpCDF in mg/kg			2.81E-06	9.60E-06	1.30E-07 U	1.40E-04	1.40E-04	1.70E-04	6.26E-06	7.54E-05 J
1,2,3,4,7,8,9-HpCDF in mg/kg			2.23E-06 U	3.50E-07 U	4.80E-08 U	8.10E-06	1.60E-05	1.90E-05	3.64E-06	2.09E-05
OCDF in mg/kg			6.01E-06 J	8.00E-06 J	1.30E-07 U	8.30E-04	3.70E-04	4.10E-04	2.23E-05 J	1.70E-04
Total 2,3,7,8 TCDD (TEQ) in mg/kg	1.10E-05	1.50E-03	2.49E-06	1.92E-06	1.30E-07	2.24E-05	1.13E-03	7.20E-04	5.94E-06	2.44E-05

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AF-MW01 (2.5-4 ft) 7/19/04 Pre-RI	AF-MW01 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (5-6.5 ft) 7/19/04 Pre-RI	AF-MW02 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (15-16.5 ft) 7/19/04 Pre-RI	AF-SB01 (4-8 ft) 7/19/04 Pre-RI	AF-SB02 (0-4 ft) 7/19/04 Pre-RI	AF-SB02 (4-8 ft) 7/19/04 Pre-RI	AF-SB03 (0-4 ft) 7/19/04 Pre-RI	AF-SB03 (8-12 ft) 7/19/04 Pre-RI	AF-SB04 (0-4 ft) 7/22/04 Pre-RI	AF-SB04 (4-8 ft) 7/22/04 Pre-RI	AF-SB04 FD (8-12 ft) 7/22/04 Pre-RI	AF-SB04 (8-12 ft) 7/22/04 Pre-RI	AP-MW01 (0-1.5 ft) 7/16/04 Pre-RI	AP-MW01 (5-6.5 ft) 7/16/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)																		
Gasoline Range Hydrocarbons in mg/kg			5.2 U	18 U	500	80	7.5 U	6.5 U	5.6 U	6.7 U	5.0 U	7.3		490		170		
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	10 J		7,100	270	160	19 J	200	160	30	33	55	1,700	2,500	4,200		
Oil Range Hydrocarbons in mg/kg	2,000	2,000	43 J		310	22	76	120 J	150	130	90	77	300	940	1,100	1,700		
Bunker C in mg/kg	2,000	2,000		230 J														
Total TPHs in mg/kg	2,000	2,000	53 J	230 J	7,410	292	236	139 J	350	290	120	110	355	2,640	3,600	5,900		
Heavy Metals																		
Arsenic in mg/kg	7	7	5 U	10 U	6 U	7 U	20 U	8 U	7 U	7 U	5 U	6 U	10 U		6 U	6 U	5 U	6 U
Cadmium in mg/kg	1	1	0.2 U	0.4 U	0.2 U	0.3 U	0.7 U	0.3 U	0.6	0.3 U	0.2	0.2 U	0.5 U		0.2 U	0.3	0.4 J	0.2 UJ
Chromium (Total) in mg/kg	260	260	37.7	23.0	50.2	43.1	19	39.5	38.0	23.3	30.5	40.0	51.0		41.9	34.4	42.0	22.0
Chromium (VI) in mg/kg	48	48																
Copper in mg/kg	36	36	60.8	29.5	31.7	47.3	70.5	31.4	75.2	62.9	27.1	38.6	56.7		44.1	48.0	21.4 J	9.9 J
Lead in mg/kg	81	81	29 J	15 J	5 J	19 J	14 J	89 J	84 J	13 J	20 J	14	27		44	42	23	3
Mercury in mg/kg	0.1	0.1	0.04	0.1 U	0.04 U	0.06 U	0.07 U	0.08 U	0.07	0.06 U	0.05 U	0.05	0.18		0.08	0.09	0.05 U	0.05 U
Nickel in mg/kg	48	48	35	36	55	48	19	31	50	22	31	29	31		45	29	14	22
Zinc in mg/kg	85	85	62.9	58	43.3	75.5	46	87	237	38.8	76.3	60.7	64		76.8	77.5	110	25.1
Conventional Chemistry Parameters (including other metals)																		
Formaldehyde in mg/kg	16,000	700,000																
Iron in mg/kg	56,000	2,500,000																
Manganese in mg/kg	11,000	490,000																
pH in pH units	2.5 - 11	2.5 - 11	6.99	6.32	6.85	6.78	7.51	7.22	6.59	6.63	8.04	6.63	7.58		8.10	8.05	5.12	5.50
Polycyclic Aromatic Hydrocarbons (PAHs)																		
Acenaphthene in mg/kg	0.26	0.26	0.049	0.015 U	4.4	0.42	0.011		0.0094 U	0.0098 U	0.0071 U	0.0083 U		2.6	2.5	4.3		
Acenaphthylene in mg/kg			0.0072 U	0.015 U	0.74	0.1	0.0098 U		0.016	0.0098 U	0.0071 U	0.0083 U		0.66	0.62	1.1		
Anthracene in mg/kg	3.5	3.5	0.051	0.015 U	0.87	0.12	0.012		0.024	0.0098 U	0.0085	0.0083 U		0.65 J	0.75 J	1.2 J		
Benzo(g,h,i)perylene in mg/kg			0.011	0.015 U	0.19 U	0.021 U	0.0098 U		0.11	0.0098 U	0.0071 U	0.0083 U		0.21	0.061	0.07		
Dibenzofuran in mg/kg	80	3,500	0.072 U	0.15 U	2	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.084 J	0.85	0.1 U		
Fluoranthene in mg/kg	2.6	2.6	0.28	0.015 U	0.6	0.065	0.013		0.24	0.012	0.041	0.011		0.87	0.85	1.5		
Fluorene in mg/kg	0.37	0.37	0.063	0.015 U	4.6	0.49	0.02		0.014	0.0098 U	0.0071 U	0.0083 U		3.7	3.5	7.5		
Phenanthrene in mg/kg			0.31	0.015 U	12	1.1	0.042		0.13	0.019	0.033	0.021		10	12	20		
Pyrene in mg/kg	16	16	0.2	0.015 U	1.2	0.12	0.017		0.34	0.019	0.034	0.013		1.5	1.5	2.5		
1-Methylnaphthalene in mg/kg	35	4,500	0.018	0.015 U	81	7.1	0.16		0.12	0.063	0.077	0.04		52	73	120		
2-Methylnaphthalene in mg/kg	320	14,000	0.032	0.015 U	150	12	0.26		0.11	0.057	0.094	0.018		96	140	240		
Naphthalene in mg/kg	1.6	1.6	0.0072 U	0.015 U	0.87	0.021 U	0.017		0.063	0.032	0.015	0.0091		2	9.2	15		
Total Naphthalenes in mg/kg			0.0536	ND		19.1	0.437		0.293	0.152	0.186	0.0671		150	222	375		
Benz(a)anthracene in mg/kg	0.12	0.12	0.051	0.015 U	0.19 U	0.021 U	0.0098 U		0.18	0.0098 U	0.013	0.0083 U		0.36	0.22	0.38		
Benzo(a)pyrene in mg/kg	0.14	0.31	0.022	0.015 U	0.19 U	0.021 U	0.0098 U		0.28	0.013	0.014	0.0083 U		0.32	0.12	0.18		
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.032	0.015 U	0.19 U	0.021 U	0.0098 U		0.19	0.0098 U	0.027	0.0083 U		0.36	0.1	0.16		
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.025	0.015 U	0.19 U	0.021 U	0.0098 U		0.22	0.0098 U	0.012	0.0083 U		0.29	0.12	0.15		
Chrysene in mg/kg	0.13	0.13	0.052	0.015 U	0.21	0.029	0.0098 U		0.25	0.0098 U	0.023	0.0083 U		0.49	0.35	0.58		
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.0072 U	0.015 U	0.19 U	0.021 U	0.0098 U		0.036	0.0098 U	0.0071 U	0.0083 U		0.057	0.038 U	0.06 U		
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.0087	0.015 U	0.19 U	0.021 U	0.0098 U		0.1	0.0098 U	0.0071 U	0.0083 U		0.18	0.041	0.06 U		
Total cPAHs TEQ in mg/kg	0.14	0.31	0.0346	ND	0.145	0.016	ND		0.355	0.0155	0.0201	ND		0.45	0.174	0.261		

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AF-MW01 (2.5-4 ft) 7/19/04 Pre-RI	AF-MW01 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (5-6.5 ft) 7/19/04 Pre-RI	AF-MW02 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (15-16.5 ft) 7/19/04 Pre-RI	AF-SB01 (4-8 ft) 7/19/04 Pre-RI	AF-SB02 (0-4 ft) 7/19/04 Pre-RI	AF-SB02 (4-8 ft) 7/19/04 Pre-RI	AF-SB03 (0-4 ft) 7/19/04 Pre-RI	AF-SB03 (8-12 ft) 7/19/04 Pre-RI	AF-SB04 (0-4 ft) 7/22/04 Pre-RI	AF-SB04 (4-8 ft) 7/22/04 Pre-RI	AF-SB04 FD (8-12 ft) 7/22/04 Pre-RI	AF-SB04 (8-12 ft) 7/22/04 Pre-RI	AP-MW01 (0-1.5 ft) 7/16/04 Pre-RI	AP-MW01 (5-6.5 ft) 7/16/04 Pre-RI
Other Semivolatiles																		
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
1,3-Dichlorobenzene in mg/kg			0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
2,4,5-Trichlorophenol in mg/kg	93	93	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
2,4,6-Trichlorophenol in mg/kg	0.015	0.015	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
2,4-Dichlorophenol in mg/kg	0.2	0.2	0.22 U	0.44 U	0.84 U	0.27 U	0.29 U		0.28 U	0.29 U	0.21 U	0.25 U		0.24 U	0.24 U	0.31 U		
2,4-Dimethylphenol in mg/kg	0.73	0.73	0.22 U	0.44 U	0.84 U	0.27 U	0.29 U		0.28 U	0.29 U	0.21 U	0.25 U		0.24 U	0.24 U	0.31 U		
2,4-Dinitrophenol in mg/kg	0.4	0.4	0.72 U	1.5 U	2.8 U	0.91 U	0.98 U		0.94 U	0.98 U	0.71 U	0.83 U		0.8 U	0.79 U	1 U		
2-Chloronaphthalene in mg/kg	6,400	280,000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
2-Chlorophenol in mg/kg	0.24	0.24	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
2-Methylphenol in mg/kg	4,000	180,000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
2-Nitroaniline in mg/kg	800	35,000	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
2-Nitrophenol in mg/kg			0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
3-Nitroaniline in mg/kg			0.43 U	0.88 U	1.7 U	0.54 U	0.59 U		0.56 U	0.59 U	0.42 U	0.5 U		0.48 U	0.48 U	0.61 U		
4,6-Dinitro-2-methylphenol in mg/kg			0.72 U	1.5 U	2.8 U	0.91 U	0.98 U		0.94 U	0.98 U	0.71 U	0.83 U		0.8 U	0.79 U	1 U		
4-Bromophenyl phenyl ether in mg/kg			0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
4-Chloro-3-methylphenol in mg/kg			0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U	0.2 U	0.14 U	0.17 U		0.16 U	0.16 U	0.2 U		
4-Chloroaniline in mg/kg	5	660	0.22 U	0.44 U	0.84 U	0.27 U	0.29 U		0.28 U	0.29 U	0.21 U	0.25 U		0.24 U	0.24 U	0.31 U		
4-Chlorophenyl phenyl ether in mg/kg			0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
4-Methylphenol in mg/kg	400	18,000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
4-Nitroaniline in mg/kg			0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
4-Nitrophenol in mg/kg			0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
Benzoic acid in mg/kg	320,000	14,000,000	0.72 U	1.5 U	2.8 U	0.91 U	0.98 U		0.94 U	0.98 U	0.71 U	0.83 U		0.8 U	0.79 U	1 U		
Benzyl alcohol in mg/kg	8,000	350,000	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
Benzyl butyl phthalate in mg/kg	0.079	0.079	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Bis(2-chloroethoxy)methane in mg/kg			0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U	0.2 U	0.14 U	0.17 U		0.16 U	0.16 U	0.2 U		
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8	0.1	0.15 U	0.28 U	0.11	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.22	0.079 U	0.1 U		
Carbazole in mg/kg			0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.16	0.079 U	0.1 U		
Diethyl phthalate in mg/kg	1.2	1.2	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Dimethyl phthalate in mg/kg			0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.68	0.079 U	0.1 U		
Di-n-butyl phthalate in mg/kg	3.6	3.6	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.48	0.079 U	0.1 U		
Di-n-octyl phthalate in mg/kg	270	270	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Hexachlorobenzene in mg/kg	0.26	0.26	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Hexachlorobutadiene in mg/kg	0.17	0.17	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U	0.2 U	0.14 U	0.17 U		0.16 U	0.16 U	0.2 U		
Hexachlorocyclopentadiene in mg/kg	480	3,500	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
Hexachloroethane in mg/kg	0.096	0.096	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U	0.2 U	0.14 U	0.17 U		0.16 U	0.16 U	0.2 U		
Isophorone in mg/kg	0.62	0.62	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Nitrobenzene in mg/kg	1.5	1.5	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U	0.2 U	0.14 U	0.17 U		0.16 U	0.16 U	0.2 U		
N-Nitrosodiphenylamine in mg/kg	0.079	0.079	0.072 U	0.15 U	0.28 U	0.41	0.098 U		0.094 U	0.098 U	0.071 U	0.083 U		0.08 U	0.079 U	0.1 U		
Pentachlorophenol in mg/kg	0.1	0.1	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.65 J	0.61 J		
Phenol in mg/kg	160	160	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U	0.2 U	0.14 U	0.17 U		0.16 U	0.16 U	0.2 U		
2,4-Dinitrotoluene in mg/kg	0.01	0.01	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		
2,6-Dinitrotoluene in mg/kg	80	3,500	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U	0.49 U	0.35 U	0.41 U		0.4 U	0.4 U	0.51 U		

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AF-MW01 (2.5-4 ft) 7/19/04 Pre-RI	AF-MW01 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (5-6.5 ft) 7/19/04 Pre-RI	AF-MW02 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (15-16.5 ft) 7/19/04 Pre-RI	AF-SB01 (4-8 ft) 7/19/04 Pre-RI	AF-SB02 (0-4 ft) 7/19/04 Pre-RI	AF-SB02 (4-8 ft) 7/19/04 Pre-RI	AF-SB03 (0-4 ft) 7/19/04 Pre-RI	AF-SB03 (8-12 ft) 7/19/04 Pre-RI	AF-SB04 (0-4 ft) 7/22/04 Pre-RI	AF-SB04 (4-8 ft) 7/22/04 Pre-RI	AF-SB04 FD (8-12 ft) 7/22/04 Pre-RI	AF-SB04 (8-12 ft) 7/22/04 Pre-RI	AP-MW01 (0-1.5 ft) 7/16/04 Pre-RI	AP-MW01 (5-6.5 ft) 7/16/04 Pre-RI
Volatile Organic Compounds (VOC)																		
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000															0.0011 U	0.0012 U
1,1,1-Trichloroethane in mg/kg	28	63															0.0011 U	0.0012 U
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000															0.0022 U	0.0024 U
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062															0.0011 U	0.0012 U
1,1,2-Trichloroethane in mg/kg	0.012	0.024															0.0011 U	0.0012 U
1,1-Dichloroethane in mg/kg	2.6	5.7															0.0011 U	0.0012 U
1,1-Dichloroethene in mg/kg	0.005	0.005															0.0011 U	0.0012 U
1,1-Dichloropropene in mg/kg																	0.0011 U	0.0012 U
1,2,3-Trichlorobenzene in mg/kg																	0.0055 U	0.006 U
1,2,3-Trichloropropane in mg/kg	0.033	4.4															0.0022 U	0.0024 U
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013															0.0055 U	0.006 U
1,2,4-Trimethylbenzene in mg/kg																	0.0011 U	0.0012 U
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160															0.0055 U	0.006 U
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02															0.0011 U	0.0012 U
1,2-Dichlorobenzene in mg/kg	0.039	0.039															0.0011 U	0.0012 U
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033															0.0011 U	0.0012 U
1,2-Dichloropropane in mg/kg	0.016	0.016															0.0011 U	0.0012 U
1,3,5-Trimethylbenzene in mg/kg	800	35,000															0.0011 U	0.0012 U
1,3-Dichlorobenzene in mg/kg																	0.0011 U	0.0012 U
1,3-Dichloropropane in mg/kg																	0.0011 U	0.0012 U
1,4-Dichloro-2-Butene in mg/kg																	0.0055 U	0.006 U
1,4-Dichlorobenzene in mg/kg	0.051	0.051															0.0011 U	0.0012 U
2,2-Dichloropropane in mg/kg																	0.0011 U	0.0012 U
2-Butanone in mg/kg	48,000	2,100,000															0.0055 U	0.006 U
2-Chloroethyl Vinyl Ether in mg/kg																	0.0055 U	0.006 U
2-Chlorotoluene in mg/kg	1,600	70,000															0.0011 U	0.0012 U
2-Hexanone in mg/kg																	0.0055 U	0.006 U
4-Chlorotoluene in mg/kg																	0.0011 U	0.0012 U
4-Methyl-2-pentanone in mg/kg	6,400	280,000															0.0055 U	0.006 U
Acetone in mg/kg	72,000	3,200,000															0.0055 U	0.015
Acrolein in mg/kg	40	1,800															0.055 U	0.06 U
Acrylonitrile in mg/kg	1.9	240															0.0055 U	0.006 U
Benzene in mg/kg	0.005	0.031															0.0011 U	0.0012 U
Bromobenzene in mg/kg																	0.0011 U	0.0012 U
Bromochloromethane in mg/kg																	0.0011 U	0.0012 U
Bromodichloromethane in mg/kg	0.005	0.005															0.0011 U	0.0012 U
Bromoethane in mg/kg																	0.0022 U	0.0024 U
Bromoform in mg/kg	0.33	0.33															0.0011 U	0.0012 U
Bromomethane in mg/kg	0.0056	0.012															0.0011 U	0.0012 U
Carbon disulfide in mg/kg	0.41	0.89															0.0011 U	0.032
Carbon tetrachloride in mg/kg	0.005	0.005															0.0011 U	0.0012 U
Chlorobenzene in mg/kg	0.38	0.84															0.0011 U	0.0012 U
Chloroethane in mg/kg																	0.0011 U	0.0012 U
Chloroform in mg/kg	0.005	0.014															0.0011 U	0.0012 U
Chloromethane in mg/kg	0.005	0.02															0.0011 U	0.0012 U
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3															0.0011 U	0.0012 U
cis-1,3-Dichloropropene in mg/kg																	0.0011 U	0.0012 U
Dibromochloromethane in mg/kg	0.005	0.005															0.0011 U	0.0012 U
Dibromomethane in mg/kg	800	35,000															0.0011 U	0.0012 U
Ethylbenzene in mg/kg	7.3	7.3															0.0011 U	0.0012 U
Hexachlorobutadiene in mg/kg	0.17	0.17															0.0055 U	0.006 U
Isopropylbenzene in mg/kg	8,000	350,000															0.0011 U	0.0012 U
Methylene chloride in mg/kg	0.042	0.26															0.0084	0.0085

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AF-MW01 (2.5-4 ft) 7/19/04 Pre-RI	AF-MW01 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (5-6.5 ft) 7/19/04 Pre-RI	AF-MW02 (10-11.5 ft) 7/19/04 Pre-RI	AF-MW02 (15-16.5 ft) 7/19/04 Pre-RI	AF-SB01 (4-8 ft) 7/19/04 Pre-RI	AF-SB02 (0-4 ft) 7/19/04 Pre-RI	AF-SB02 (4-8 ft) 7/19/04 Pre-RI	AF-SB03 (0-4 ft) 7/19/04 Pre-RI	AF-SB03 (8-12 ft) 7/19/04 Pre-RI	AF-SB04 (0-4 ft) 7/22/04 Pre-RI	AF-SB04 (4-8 ft) 7/22/04 Pre-RI	AF-SB04 FD (8-12 ft) 7/22/04 Pre-RI	AF-SB04 (8-12 ft) 7/22/04 Pre-RI	AP-MW01 (0-1.5 ft) 7/16/04 Pre-RI	AP-MW01 (5-6.5 ft) 7/16/04 Pre-RI
Methyliodide in mg/kg																	0.0011 U	0.0012 U
n-Butylbenzene in mg/kg																	0.0011 U	0.0012 U
n-Propylbenzene in mg/kg	8,000	350,000															0.0011 U	0.0012 U
p-Isopropyltoluene in mg/kg																	0.0011 U	0.0012 U
sec-Butylbenzene in mg/kg																	0.0011 U	0.0012 U
Styrene in mg/kg	1.2	12															0.0011 U	0.0012 U
tert-Butylbenzene in mg/kg																	0.0011 U	0.0012 U
Tetrachloroethene (PCE) in mg/kg	0.015	0.015															0.0011 U	0.0012 U
Toluene in mg/kg	18	18															0.0011 U	0.0012 U
trans-1,2-Dichloroethene in mg/kg	0.12	0.26															0.0011 U	0.0012 U
trans-1,3-Dichloropropene in mg/kg																	0.0011 U	0.0012 U
Trichloroethene (TCE) in mg/kg	0.005	0.015															0.0011 U	0.0012 U
Trichlorofluoromethane in mg/kg	24,000	1,100,000															0.0011 U	0.0012 U
Vinyl acetate in mg/kg	2.9	6.3															0.0055 U	0.006 U
Vinyl chloride in mg/kg	0.005	0.005															0.0011 U	0.0012 U
o-Xylene in mg/kg	1.8	4															0.0011 U	0.0012 U
Xylenes (total) in mg/kg	16,000	700,000															0.0011 U	0.0012 U
Naphthalene in mg/kg	1.6	1.6															0.0055 U	0.006 U
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1016 in mg/kg			0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U	0.049 U	0.036 U	0.041 U	0.036 U			0.041 U		
Aroclor 1221 in mg/kg			0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U	0.049 U	0.036 U	0.041 U	0.036 U			0.041 U		
Aroclor 1232 in mg/kg			0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U	0.049 U	0.036 U	0.041 U	0.036 U			0.041 U		
Aroclor 1242 in mg/kg			0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U	0.049 U	0.036 U	0.041 U	0.036 U			0.041 U		
Aroclor 1248 in mg/kg			0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U	0.049 U	0.036 U	0.041 U	0.036 U			0.041 U		
Aroclor 1254 in mg/kg			0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U	0.049 U	0.036 U	0.041 U	0.036 U			0.041 U		
Aroclor 1260 in mg/kg			0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U	0.049 U	0.036 U	0.041 U	0.036 U			0.041 U		
Total PCBs in mg/kg	1	10	0.126 U	0.256 U	0.133 U	0.157 U	0.172 U		0.164 U	0.172 U	0.126 U	0.144 U	0.126 U			0.144 U		

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AP-SB01 (0-4 ft) 7/23/04 Pre-RI	AP-SB01 (4-8 ft) 7/23/04 Pre-RI	BK-01 (0-0.5 ft) 3/31/92 Pre-RI	BK-06 (0-0.5 ft) 7/6/92 Pre-RI	BK-07 (0-0.5 ft) 7/6/92 Pre-RI	BK-08 (0-0.5 ft) 7/6/92 Pre-RI	CD-SB03 (0-4 ft) 7/19/04 Pre-RI	CD-SB03 (4-8 ft) 7/19/04 Pre-RI	CD-SB04 (0-4 ft) 7/19/04 Pre-RI	CD-SB04 (4-8 ft) 7/19/04 Pre-RI	CW-MW01 (2.5-4 ft) 7/20/04 Pre-RI	CW-MW01 (7.5-9 ft) 7/20/04 Pre-RI	CW-SB01 (0-4 ft) 7/22/04 Pre-RI	CW-SB01 (4-8 ft) 7/22/04 Pre-RI	CW-SB02 (0-4 ft) 7/22/04 Pre-RI	CW-SB02 (4-8 ft) 7/22/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)																		
Gasoline Range Hydrocarbons in mg/kg																		
Diesel Range Hydrocarbons in mg/kg	2,000	2,000							140	5.0 U	42 U	15 U	110	89	27	5.0 U	5.0 U	20
Oil Range Hydrocarbons in mg/kg	2,000	2,000							900	10 U	54 J	81 J	410	510	140	16	10 U	16
Bunker C in mg/kg	2,000	2,000																
Total TPHs in mg/kg	2,000	2,000							1,040	ND	96 J	96 J	520	599	167	18.5	ND	36
Heavy Metals																		
Arsenic in mg/kg	7	7	5 U	6 U					5 U	6 U	5 U	6 U	5 U	7	5 U	6 U	5 U	7 U
Cadmium in mg/kg	1	1	0.3	0.2 U					0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.8	0.3	0.2	0.2 U	0.3 U
Chromium (Total) in mg/kg	260	260	35.3	20.1					16.1 J	24.3 J	22.6 J	13.4 J	40.2	75.0	27.7	23.6	21.4	62.7
Chromium (VI) in mg/kg	48	48																
Copper in mg/kg	36	36	15.6	8.6					9.5 J	7.5 J	8.5 J	5.4 J	53.5	53.2	20.8	15.9	12.0	38.7
Lead in mg/kg	81	81	16	2 U					11	2 U	2 U	2 U	55 J	95 J	10	5	6	8
Mercury in mg/kg	0.1	0.1	0.21	0.05 U	0.21	0.1 U	0.1 U	0.2	0.05 U	0.04 U	0.04 U	0.05	0.39	0.33	0.09	0.06 U	0.04 U	0.08
Nickel in mg/kg	48	48	20	23					12	14	16	9	54	34	21	22	19	50
Zinc in mg/kg	85	85	54.9	27.5					24.4	19.4	20.8	15.2	94.6	107	43.0	33.0	28.8	59.4
Conventional Chemistry Parameters (including other metals)																		
Formaldehyde in mg/kg	16,000	700,000																
Iron in mg/kg	56,000	2,500,000																
Manganese in mg/kg	11,000	490,000																
pH in pH units	2.5 - 11	2.5 - 11	6.80	6.47					10.01	10.96	9.28	8.07	8.01	8.39	7.76	7.94	9.07	7.37
Polycyclic Aromatic Hydrocarbons (PAHs)																		
Acenaphthene in mg/kg	0.26	0.26							0.1		0.0071 U							
Acenaphthylene in mg/kg									0.0072 U		0.19							
Anthracene in mg/kg	3.5	3.5							0.018		0.041							
Benzo(g,h,i)perylene in mg/kg									0.0084		0.21							
Dibenzofuran in mg/kg	80	3,500																
Fluoranthene in mg/kg	2.6	2.6							0.056		0.049							
Fluorene in mg/kg	0.37	0.37							0.077		0.021							
Phenanthrene in mg/kg									0.042		0.014							
Pyrene in mg/kg	16	16							0.038		0.14							
1-Methylnaphthalene in mg/kg	35	4,500							0.0074		0.0071 U							
2-Methylnaphthalene in mg/kg	320	14,000							0.0083		0.0071 U							
Naphthalene in mg/kg	1.6	1.6							0.023		0.0071 U							
Total Naphthalenes in mg/kg									0.0387		ND							
Benz(a)anthracene in mg/kg	0.12	0.12							0.013		0.062							
Benzo(a)pyrene in mg/kg	0.14	0.31							0.011		0.17							
Benzo(b)fluoranthene in mg/kg	0.38	0.38							0.012		0.069							
Benzo(k)fluoranthene in mg/kg	0.38	0.38							0.0094		0.076							
Chrysene in mg/kg	0.13	0.13							0.016		0.072							
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58							0.0072 U		0.019							
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1							0.0072 U		0.13							
Total cPAHs TEQ in mg/kg	0.14	0.31							0.0153		0.206							

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AP-SB01 (0-4 ft) 7/23/04 Pre-RI	AP-SB01 (4-8 ft) 7/23/04 Pre-RI	BK-01 (0-0.5 ft) 3/31/92 Pre-RI	BK-06 (0-0.5 ft) 7/6/92 Pre-RI	BK-07 (0-0.5 ft) 7/6/92 Pre-RI	BK-08 (0-0.5 ft) 7/6/92 Pre-RI	CD-SB03 (0-4 ft) 7/19/04 Pre-RI	CD-SB03 (4-8 ft) 7/19/04 Pre-RI	CD-SB04 (0-4 ft) 7/19/04 Pre-RI	CD-SB04 (4-8 ft) 7/19/04 Pre-RI	CW-MW01 (2.5-4 ft) 7/20/04 Pre-RI	CW-MW01 (7.5-9 ft) 7/20/04 Pre-RI	CW-SB01 (0-4 ft) 7/22/04 Pre-RI	CW-SB01 (4-8 ft) 7/22/04 Pre-RI	CW-SB02 (0-4 ft) 7/22/04 Pre-RI	CW-SB02 (4-8 ft) 7/22/04 Pre-RI
Other Semivolatiles																		
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013																
1,2-Dichlorobenzene in mg/kg	0.039	0.039																
1,3-Dichlorobenzene in mg/kg																		
1,4-Dichlorobenzene in mg/kg	0.051	0.051																
2,4,5-Trichlorophenol in mg/kg	93	93																
2,4,6-Trichlorophenol in mg/kg	0.015	0.015																
2,4-Dichlorophenol in mg/kg	0.2	0.2																
2,4-Dimethylphenol in mg/kg	0.73	0.73																
2,4-Dinitrophenol in mg/kg	0.4	0.4																
2-Chloronaphthalene in mg/kg	6,400	280,000																
2-Chlorophenol in mg/kg	0.24	0.24																
2-Methylphenol in mg/kg	4,000	180,000																
2-Nitroaniline in mg/kg	800	35,000																
2-Nitrophenol in mg/kg																		
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1																
3-Nitroaniline in mg/kg																		
4,6-Dinitro-2-methylphenol in mg/kg																		
4-Bromophenyl phenyl ether in mg/kg																		
4-Chloro-3-methylphenol in mg/kg																		
4-Chloroaniline in mg/kg	5	660																
4-Chlorophenyl phenyl ether in mg/kg																		
4-Methylphenol in mg/kg	400	18,000																
4-Nitroaniline in mg/kg																		
4-Nitrophenol in mg/kg																		
Benzoic acid in mg/kg	320,000	14,000,000																
Benzyl alcohol in mg/kg	8,000	350,000																
Benzyl butyl phthalate in mg/kg	0.079	0.079																
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900																
Bis(2-chloroethoxy)methane in mg/kg																		
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01																
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8																
Carbazole in mg/kg																		
Diethyl phthalate in mg/kg	1.2	1.2																
Dimethyl phthalate in mg/kg																		
Di-n-butyl phthalate in mg/kg	3.6	3.6																
Di-n-octyl phthalate in mg/kg	270	270																
Hexachlorobenzene in mg/kg	0.26	0.26																
Hexachlorobutadiene in mg/kg	0.17	0.17																
Hexachlorocyclopentadiene in mg/kg	480	3,500																
Hexachloroethane in mg/kg	0.096	0.096																
Isophorone in mg/kg	0.62	0.62																
Nitrobenzene in mg/kg	1.5	1.5																
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01																
N-Nitrosodiphenylamine in mg/kg	0.079	0.079																
Pentachlorophenol in mg/kg	0.1	0.1																
Phenol in mg/kg	160	160																
2,4-Dinitrotoluene in mg/kg	0.01	0.01																
2,6-Dinitrotoluene in mg/kg	80	3,500																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AP-SB01 (0-4 ft) 7/23/04 Pre-RI	AP-SB01 (4-8 ft) 7/23/04 Pre-RI	BK-01 (0-0.5 ft) 3/31/92 Pre-RI	BK-06 (0-0.5 ft) 7/6/92 Pre-RI	BK-07 (0-0.5 ft) 7/6/92 Pre-RI	BK-08 (0-0.5 ft) 7/6/92 Pre-RI	CD-SB03 (0-4 ft) 7/19/04 Pre-RI	CD-SB03 (4-8 ft) 7/19/04 Pre-RI	CD-SB04 (0-4 ft) 7/19/04 Pre-RI	CD-SB04 (4-8 ft) 7/19/04 Pre-RI	CW-MW01 (2.5-4 ft) 7/20/04 Pre-RI	CW-MW01 (7.5-9 ft) 7/20/04 Pre-RI	CW-SB01 (0-4 ft) 7/22/04 Pre-RI	CW-SB01 (4-8 ft) 7/22/04 Pre-RI	CW-SB02 (0-4 ft) 7/22/04 Pre-RI	CW-SB02 (4-8 ft) 7/22/04 Pre-RI
Volatile Organic Compounds (VOC)																		
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000	0.001 U	0.0011 U														
1,1,1-Trichloroethane in mg/kg	28	63	0.001 U	0.0011 U														
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000	0.0021 U	0.0022 U														
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062	0.001 U	0.0011 U														
1,1,2-Trichloroethane in mg/kg	0.012	0.024	0.001 U	0.0011 U														
1,1-Dichloroethane in mg/kg	2.6	5.7	0.001 U	0.0011 U														
1,1-Dichloroethene in mg/kg	0.005	0.005	0.001 U	0.0011 U														
1,1-Dichloropropene in mg/kg			0.001 U	0.0011 U														
1,2,3-Trichlorobenzene in mg/kg			0.0052 U	0.0054 U														
1,2,3-Trichloropropane in mg/kg	0.033	4.4	0.0021 U	0.0022 U														
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.0052 U	0.0054 U														
1,2,4-Trimethylbenzene in mg/kg			0.001 U	0.0011 U														
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160	0.0052 U	0.0054 U														
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02	0.001 U	0.0011 U														
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.001 U	0.0011 U														
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033	0.001 U	0.0011 U														
1,2-Dichloropropane in mg/kg	0.016	0.016	0.001 U	0.0011 U														
1,3,5-Trimethylbenzene in mg/kg	800	35,000	0.001 U	0.0011 U														
1,3-Dichlorobenzene in mg/kg			0.001 U	0.0011 U														
1,3-Dichloropropane in mg/kg			0.001 U	0.0011 U														
1,4-Dichloro-2-Butene in mg/kg			0.0052 U	0.0054 U														
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.001 U	0.0011 U														
2,2-Dichloropropane in mg/kg			0.001 U	0.0011 U														
2-Butanone in mg/kg	48,000	2,100,000	0.0052 U	0.0054 U														
2-Chloroethyl Vinyl Ether in mg/kg			0.0052 U	0.0054 U														
2-Chlorotoluene in mg/kg	1,600	70,000	0.001 U	0.0011 U														
2-Hexanone in mg/kg			0.0052 U	0.0054 U														
4-Chlorotoluene in mg/kg			0.001 U	0.0011 U														
4-Methyl-2-pentanone in mg/kg	6,400	280,000	0.0052 U	0.0054 U														
Acetone in mg/kg	72,000	3,200,000	0.0052 U	0.0071														
Acrolein in mg/kg	40	1,800	0.052 U	0.054 U														
Acrylonitrile in mg/kg	1.9	240	0.0052 U	0.0054 U														
Benzene in mg/kg	0.005	0.031	0.001 U	0.0011 U														
Bromobenzene in mg/kg			0.001 U	0.0011 U														
Bromochloromethane in mg/kg			0.001 U	0.0011 U														
Bromodichloromethane in mg/kg	0.005	0.005	0.001 U	0.0011 U														
Bromoethane in mg/kg			0.0021 U	0.0022 U														
Bromoform in mg/kg	0.33	0.33	0.001 U	0.0011 U														
Bromomethane in mg/kg	0.0056	0.012	0.001 U	0.0011 U														
Carbon disulfide in mg/kg	0.41	0.89	0.001 U	0.018														
Carbon tetrachloride in mg/kg	0.005	0.005	0.001 U	0.0011 U														
Chlorobenzene in mg/kg	0.38	0.84	0.001 U	0.0011 U														
Chloroethane in mg/kg			0.001 U	0.0011 U														
Chloroform in mg/kg	0.005	0.014	0.001 U	0.0011 U														
Chloromethane in mg/kg	0.005	0.02	0.001 U	0.0011 U														
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3	0.001 U	0.0011 U														
cis-1,3-Dichloropropene in mg/kg			0.001 U	0.0011 U														
Dibromochloromethane in mg/kg	0.005	0.005	0.001 U	0.0011 U														
Dibromomethane in mg/kg	800	35,000	0.001 U	0.0011 U														
Ethylbenzene in mg/kg	7.3	7.3	0.001 U	0.0011 U														
Hexachlorobutadiene in mg/kg	0.17	0.17	0.0052 U	0.0054 U														
Isopropylbenzene in mg/kg	8,000	350,000	0.001 U	0.0011 U														
Methylene chloride in mg/kg	0.042	0.26	0.0021 U	0.0027														

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	AP-SB01 (0-4 ft) 7/23/04 Pre-RI	AP-SB01 (4-8 ft) 7/23/04 Pre-RI	BK-01 (0-0.5 ft) 3/31/92 Pre-RI	BK-06 (0-0.5 ft) 7/6/92 Pre-RI	BK-07 (0-0.5 ft) 7/6/92 Pre-RI	BK-08 (0-0.5 ft) 7/6/92 Pre-RI	CD-SB03 (0-4 ft) 7/19/04 Pre-RI	CD-SB03 (4-8 ft) 7/19/04 Pre-RI	CD-SB04 (0-4 ft) 7/19/04 Pre-RI	CD-SB04 (4-8 ft) 7/19/04 Pre-RI	CW-MW01 (2.5-4 ft) 7/20/04 Pre-RI	CW-MW01 (7.5-9 ft) 7/20/04 Pre-RI	CW-SB01 (0-4 ft) 7/22/04 Pre-RI	CW-SB01 (4-8 ft) 7/22/04 Pre-RI	CW-SB02 (0-4 ft) 7/22/04 Pre-RI	CW-SB02 (4-8 ft) 7/22/04 Pre-RI
Methyliodide in mg/kg			0.001 U	0.0011 U														
n-Butylbenzene in mg/kg			0.001 U	0.0011 U														
n-Propylbenzene in mg/kg	8,000	350,000	0.001 U	0.0011 U														
p-Isopropyltoluene in mg/kg			0.001 U	0.0011 U														
sec-Butylbenzene in mg/kg			0.001 U	0.0011 U														
Styrene in mg/kg	1.2	12	0.001 U	0.0011 U														
tert-Butylbenzene in mg/kg			0.001 U	0.0011 U														
Tetrachloroethene (PCE) in mg/kg	0.015	0.015	0.001 U	0.0011 U														
Toluene in mg/kg	18	18	0.001 U	0.0011 U														
trans-1,2-Dichloroethene in mg/kg	0.12	0.26	0.001 U	0.0011 U														
trans-1,3-Dichloropropene in mg/kg			0.001 U	0.0011 U														
Trichloroethene (TCE) in mg/kg	0.005	0.015	0.001 U	0.0011 U														
Trichlorofluoromethane in mg/kg	24,000	1,100,000	0.001 U	0.0011 U														
Vinyl acetate in mg/kg	2.9	6.3	0.0052 U	0.0054 U														
Vinyl chloride in mg/kg	0.005	0.005	0.001 U	0.0011 U														
o-Xylene in mg/kg	1.8	4	0.001 U	0.0011 U														
Xylenes (total) in mg/kg	16,000	700,000	0.001 U	0.0011 U														
Naphthalene in mg/kg	1.6	1.6	0.0052 U	0.0054 U														
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1016 in mg/kg									0.036 U		0.036 U							
Aroclor 1221 in mg/kg									0.036 U		0.036 U							
Aroclor 1232 in mg/kg									0.036 U		0.036 U							
Aroclor 1242 in mg/kg									0.036 U		0.036 U							
Aroclor 1248 in mg/kg									0.036 U		0.036 U							
Aroclor 1254 in mg/kg									0.036 U		0.036 U							
Aroclor 1260 in mg/kg									0.036 U		0.036 U							
Total PCBs in mg/kg	1	10							0.126 U		0.126 U							

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-11S (7-8.5 ft) 5/27/93 Pre-RI	ET-SB01 (0-4 ft) 7/15/04 Pre-RI	ET-SB01 (4-8 ft) 7/15/04 Pre-RI	ET-SB02 (0-4 ft) 7/20/04 Pre-RI	ET-SB02 (4-8 ft) 7/20/04 Pre-RI	ET-SS02 (0-0.5 ft) 7/21/04 Pre-RI	ET-SS03 (0-0.5 ft) 7/21/04 Pre-RI	GF-SB02 (0-4 ft) 7/14/04 Pre-RI	GF-SB02 (8-12 ft) 7/14/04 Pre-RI	GF-SB03 (0-4 ft) 7/19/04 Pre-RI	GF-SB03 (8-12 ft) 7/19/04 Pre-RI	GF-SB04 (0-4 ft) 7/15/04 Pre-RI	GF-SB04 (4-8 ft) 7/15/04 Pre-RI	GF-SB05 (0-4 ft) 7/21/04 Pre-RI	GF-SB05 (4-8 ft) 7/21/04 Pre-RI	GF-SB10 (0-4 ft) 7/21/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)																		
Gasoline Range Hydrocarbons in mg/kg														5.1 U				
Diesel Range Hydrocarbons in mg/kg	2,000	2,000		14	5.0 U	78	5.6	100	17	10	59	14 U	5.4 U	36	22	9.4	5.0 U	35
Oil Range Hydrocarbons in mg/kg	2,000	2,000		60	20	240	30	690	110	54	190	140	44	53	34	130	22	200
Bunker C in mg/kg	2,000	2,000												220	150			
Total TPHs in mg/kg	2,000	2,000		74	22.5	318	35.6	790	127	64	249	154	49.4	220	150	139.4	24.5	235
Heavy Metals																		
Arsenic in mg/kg	7	7		5 U	6 U					5 U	7 U	5 U	6 U	5 U	6 U	5 U	6 U	10 U
Cadmium in mg/kg	1	1		0.2 U	0.3 U					0.2 U	2.3	0.2 U	0.2 U	0.2 UJ	0.3 J	0.2 U	0.3	0.5 U
Chromium (Total) in mg/kg	260	260		27.9	19.7					28.2	24.8	21.7 J	16.9 J	16.8	23.0	23.1	25.7	21.0
Chromium (VI) in mg/kg	48	48		0.119 U	0.139 U													
Copper in mg/kg	36	36		20.5 J	12.2 J					23.8 J	40.1 J	21.2 J	9.4 J	10.5 J	26.4 J	12.6	11.6	42.6
Lead in mg/kg	81	81		18	11					3	51	6	3	3	8	2 J	4	6
Mercury in mg/kg	0.1	0.1	0.11 U	0.10 J	0.07 J					0.05 U	0.14 J	0.05	0.05 U	0.04 U	0.08	0.05 U	0.04	0.05 U
Nickel in mg/kg	48	48		19	17					32	23	25	17	15	19	18	18	32
Zinc in mg/kg	85	85		45.7	36.0					36.0	52.0	39.9	23.4	26.1	37.4	27.3	28.1	84
Conventional Chemistry Parameters (including other metals)																		
Formaldehyde in mg/kg	16,000	700,000																
Iron in mg/kg	56,000	2,500,000																
Manganese in mg/kg	11,000	490,000																
pH in pH units	2.5 - 11	2.5 - 11		8.12	7.73	7.40	7.76	6.90	6.90	10.42	9.90	8.07	8.19	8.50	7.92	8.41	7.73	7.36
Polycyclic Aromatic Hydrocarbons (PAHs)																		
Acenaphthene in mg/kg	0.26	0.26																
Acenaphthylene in mg/kg																		
Anthracene in mg/kg	3.5	3.5																
Benzo(g,h,i)perylene in mg/kg																		
Dibenzofuran in mg/kg	80	3,500																
Fluoranthene in mg/kg	2.6	2.6																
Fluorene in mg/kg	0.37	0.37																
Phenanthrene in mg/kg																		
Pyrene in mg/kg	16	16																
1-Methylnaphthalene in mg/kg	35	4,500																
2-Methylnaphthalene in mg/kg	320	14,000																
Naphthalene in mg/kg	1.6	1.6																
Total Naphthalenes in mg/kg																		
Benz(a)anthracene in mg/kg	0.12	0.12																
Benzo(a)pyrene in mg/kg	0.14	0.31																
Benzo(b)fluoranthene in mg/kg	0.38	0.38																
Benzo(k)fluoranthene in mg/kg	0.38	0.38																
Chrysene in mg/kg	0.13	0.13																
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58																
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1																
Total cPAHs TEQ in mg/kg	0.14	0.31																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-11S (7-8.5 ft) 5/27/93 Pre-RI	ET-SB01 (0-4 ft) 7/15/04 Pre-RI	ET-SB01 (4-8 ft) 7/15/04 Pre-RI	ET-SB02 (0-4 ft) 7/20/04 Pre-RI	ET-SB02 (4-8 ft) 7/20/04 Pre-RI	ET-SS02 (0-0.5 ft) 7/21/04 Pre-RI	ET-SS03 (0-0.5 ft) 7/21/04 Pre-RI	GF-SB02 (0-4 ft) 7/14/04 Pre-RI	GF-SB02 (8-12 ft) 7/14/04 Pre-RI	GF-SB03 (0-4 ft) 7/19/04 Pre-RI	GF-SB03 (8-12 ft) 7/19/04 Pre-RI	GF-SB04 (0-4 ft) 7/15/04 Pre-RI	GF-SB04 (4-8 ft) 7/15/04 Pre-RI	GF-SB05 (0-4 ft) 7/21/04 Pre-RI	GF-SB05 (4-8 ft) 7/21/04 Pre-RI	GF-SB10 (0-4 ft) 7/21/04 Pre-RI
Other Semivolatiles																		
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013																
1,2-Dichlorobenzene in mg/kg	0.039	0.039																
1,3-Dichlorobenzene in mg/kg																		
1,4-Dichlorobenzene in mg/kg	0.051	0.051																
2,4,5-Trichlorophenol in mg/kg	93	93																
2,4,6-Trichlorophenol in mg/kg	0.015	0.015																
2,4-Dichlorophenol in mg/kg	0.2	0.2																
2,4-Dimethylphenol in mg/kg	0.73	0.73																
2,4-Dinitrophenol in mg/kg	0.4	0.4																
2-Chloronaphthalene in mg/kg	6,400	280,000																
2-Chlorophenol in mg/kg	0.24	0.24																
2-Methylphenol in mg/kg	4,000	180,000																
2-Nitroaniline in mg/kg	800	35,000																
2-Nitrophenol in mg/kg																		
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1																
3-Nitroaniline in mg/kg																		
4,6-Dinitro-2-methylphenol in mg/kg																		
4-Bromophenyl phenyl ether in mg/kg																		
4-Chloro-3-methylphenol in mg/kg																		
4-Chloroaniline in mg/kg	5	660																
4-Chlorophenyl phenyl ether in mg/kg																		
4-Methylphenol in mg/kg	400	18,000																
4-Nitroaniline in mg/kg																		
4-Nitrophenol in mg/kg																		
Benzoic acid in mg/kg	320,000	14,000,000																
Benzyl alcohol in mg/kg	8,000	350,000																
Benzyl butyl phthalate in mg/kg	0.079	0.079																
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900																
Bis(2-chloroethoxy)methane in mg/kg																		
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01																
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8																
Carbazole in mg/kg																		
Diethyl phthalate in mg/kg	1.2	1.2																
Dimethyl phthalate in mg/kg																		
Di-n-butyl phthalate in mg/kg	3.6	3.6																
Di-n-octyl phthalate in mg/kg	270	270																
Hexachlorobenzene in mg/kg	0.26	0.26																
Hexachlorobutadiene in mg/kg	0.17	0.17																
Hexachlorocyclopentadiene in mg/kg	480	3,500																
Hexachloroethane in mg/kg	0.096	0.096																
Isophorone in mg/kg	0.62	0.62																
Nitrobenzene in mg/kg	1.5	1.5																
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01																
N-Nitrosodiphenylamine in mg/kg	0.079	0.079																
Pentachlorophenol in mg/kg	0.1	0.1																
Phenol in mg/kg	160	160																
2,4-Dinitrotoluene in mg/kg	0.01	0.01																
2,6-Dinitrotoluene in mg/kg	80	3,500																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-11S (7-8.5 ft) 5/27/93 Pre-RI	ET-SB01 (0-4 ft) 7/15/04 Pre-RI	ET-SB01 (4-8 ft) 7/15/04 Pre-RI	ET-SB02 (0-4 ft) 7/20/04 Pre-RI	ET-SB02 (4-8 ft) 7/20/04 Pre-RI	ET-SS02 (0-0.5 ft) 7/21/04 Pre-RI	ET-SS03 (0-0.5 ft) 7/21/04 Pre-RI	GF-SB02 (0-4 ft) 7/14/04 Pre-RI	GF-SB02 (8-12 ft) 7/14/04 Pre-RI	GF-SB03 (0-4 ft) 7/19/04 Pre-RI	GF-SB03 (8-12 ft) 7/19/04 Pre-RI	GF-SB04 (0-4 ft) 7/15/04 Pre-RI	GF-SB04 (4-8 ft) 7/15/04 Pre-RI	GF-SB05 (0-4 ft) 7/21/04 Pre-RI	GF-SB05 (4-8 ft) 7/21/04 Pre-RI	GF-SB10 (0-4 ft) 7/21/04 Pre-RI
Volatile Organic Compounds (VOC)																		
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000												0.001 U				
1,1,1-Trichloroethane in mg/kg	28	63												0.001 U				
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000												0.0021 U				
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062												0.001 U				
1,1,2-Trichloroethane in mg/kg	0.012	0.024												0.001 U				
1,1-Dichloroethane in mg/kg	2.6	5.7												0.001 U				
1,1-Dichloroethene in mg/kg	0.005	0.005												0.001 U				
1,1-Dichloropropene in mg/kg														0.001 U				
1,2,3-Trichlorobenzene in mg/kg														0.0052 U				
1,2,3-Trichloropropane in mg/kg	0.033	4.4												0.0021 U				
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013												0.0052 U				
1,2,4-Trimethylbenzene in mg/kg														0.001 U				
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160												0.0052 U				
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02												0.001 U				
1,2-Dichlorobenzene in mg/kg	0.039	0.039												0.001 U				
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033												0.001 U				
1,2-Dichloropropane in mg/kg	0.016	0.016												0.001 U				
1,3,5-Trimethylbenzene in mg/kg	800	35,000												0.001 U				
1,3-Dichlorobenzene in mg/kg														0.001 U				
1,3-Dichloropropane in mg/kg														0.001 U				
1,4-Dichloro-2-Butene in mg/kg														0.0052 U				
1,4-Dichlorobenzene in mg/kg	0.051	0.051												0.001 U				
2,2-Dichloropropane in mg/kg														0.001 U				
2-Butanone in mg/kg	48,000	2,100,000												0.0052 U				
2-Chloroethyl Vinyl Ether in mg/kg														0.0052 U				
2-Chlorotoluene in mg/kg	1,600	70,000												0.001 U				
2-Hexanone in mg/kg														0.0052 U				
4-Chlorotoluene in mg/kg														0.001 U				
4-Methyl-2-pentanone in mg/kg	6,400	280,000												0.0052 U				
Acetone in mg/kg	72,000	3,200,000												0.0052 U				
Acrolein in mg/kg	40	1,800												0.052 U				
Acrylonitrile in mg/kg	1.9	240												0.0052 U				
Benzene in mg/kg	0.005	0.031												0.001 U				
Bromobenzene in mg/kg														0.001 U				
Bromochloromethane in mg/kg														0.001 U				
Bromodichloromethane in mg/kg	0.005	0.005												0.001 U				
Bromoethane in mg/kg														0.0021 U				
Bromoform in mg/kg	0.33	0.33												0.001 U				
Bromomethane in mg/kg	0.0056	0.012												0.001 U				
Carbon disulfide in mg/kg	0.41	0.89												0.001 U				
Carbon tetrachloride in mg/kg	0.005	0.005												0.001 U				
Chlorobenzene in mg/kg	0.38	0.84												0.001 U				
Chloroethane in mg/kg														0.001 U				
Chloroform in mg/kg	0.005	0.014												0.001 U				
Chloromethane in mg/kg	0.005	0.02												0.001 U				
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3												0.001 U				
cis-1,3-Dichloropropene in mg/kg														0.001 U				
Dibromochloromethane in mg/kg	0.005	0.005												0.001 U				
Dibromomethane in mg/kg	800	35,000												0.001 U				
Ethylbenzene in mg/kg	7.3	7.3												0.001 U				
Hexachlorobutadiene in mg/kg	0.17	0.17												0.0052 U				
Isopropylbenzene in mg/kg	8,000	350,000												0.001 U				
Methylene chloride in mg/kg	0.042	0.26												0.0021 U				

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	EMW-11S (7-8.5 ft) 5/27/93 Pre-RI	ET-SB01 (0-4 ft) 7/15/04 Pre-RI	ET-SB01 (4-8 ft) 7/15/04 Pre-RI	ET-SB02 (0-4 ft) 7/20/04 Pre-RI	ET-SB02 (4-8 ft) 7/20/04 Pre-RI	ET-SS02 (0-0.5 ft) 7/21/04 Pre-RI	ET-SS03 (0-0.5 ft) 7/21/04 Pre-RI	GF-SB02 (0-4 ft) 7/14/04 Pre-RI	GF-SB02 (8-12 ft) 7/14/04 Pre-RI	GF-SB03 (0-4 ft) 7/19/04 Pre-RI	GF-SB03 (8-12 ft) 7/19/04 Pre-RI	GF-SB04 (0-4 ft) 7/15/04 Pre-RI	GF-SB04 (4-8 ft) 7/15/04 Pre-RI	GF-SB05 (0-4 ft) 7/21/04 Pre-RI	GF-SB05 (4-8 ft) 7/21/04 Pre-RI	GF-SB10 (0-4 ft) 7/21/04 Pre-RI
Methyliodide in mg/kg														0.001 U				
n-Butylbenzene in mg/kg														0.001 U				
n-Propylbenzene in mg/kg	8,000	350,000												0.001 U				
p-Isopropyltoluene in mg/kg														0.001 U				
sec-Butylbenzene in mg/kg														0.001 U				
Styrene in mg/kg	1.2	12												0.001 U				
tert-Butylbenzene in mg/kg														0.001 U				
Tetrachloroethene (PCE) in mg/kg	0.015	0.015												0.001 U				
Toluene in mg/kg	18	18												0.001 U				
trans-1,2-Dichloroethene in mg/kg	0.12	0.26												0.001 U				
trans-1,3-Dichloropropene in mg/kg														0.001 U				
Trichloroethene (TCE) in mg/kg	0.005	0.015												0.001 U				
Trichlorofluoromethane in mg/kg	24,000	1,100,000												0.001 U				
Vinyl acetate in mg/kg	2.9	6.3												0.0052 U				
Vinyl chloride in mg/kg	0.005	0.005												0.001 U				
o-Xylene in mg/kg	1.8	4												0.001 U				
Xylenes (total) in mg/kg	16,000	700,000												0.001 U				
Naphthalene in mg/kg	1.6	1.6												0.0052 U				
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1016 in mg/kg				0.037 U	0.037 U	0.037 U	0.041 U	0.4 U	0.036 U									
Aroclor 1221 in mg/kg				0.037 U	0.037 U	0.037 U	0.041 U	0.4 U	0.036 U									
Aroclor 1232 in mg/kg				0.037 U	0.037 U	0.037 U	0.041 U	0.4 U	0.036 U									
Aroclor 1242 in mg/kg				0.037 U	0.037 U	0.037 U	0.041 U	0.4 U	0.036 U									
Aroclor 1248 in mg/kg				0.037 U	0.037 U	0.037 U	0.041 U	0.4 U	0.036 U									
Aroclor 1254 in mg/kg				0.037 U	0.037 U	0.037 U	0.041 U	0.27 J	0.045									
Aroclor 1260 in mg/kg				0.037 U	0.037 U	0.037 U	0.041 U	0.4 U	0.036 U									
Total PCBs in mg/kg	1	10		0.13 U	0.13 U	0.13 U	0.144 U	1.47 J	0.153									

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB10 (12-16 ft) 7/21/04 Pre-RI	GF-SB11 (0-4 ft) 7/20/04 Pre-RI	GF-SB11 (4-8 ft) 7/20/04 Pre-RI	GF-SB12 (0-4 ft) 7/20/04 Pre-RI	GF-SB12 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (8-12 ft) 7/20/04 Pre-RI	GF-SB14 (0-4 ft) 7/20/04 Pre-RI	GF-SB14 (8-12 ft) 7/20/04 Pre-RI	GF-SB15 (0-4 ft) 7/20/04 Pre-RI	GF-SB15 (4-8 ft) 7/20/04 Pre-RI	GF-SB16 (0-4 ft) 7/20/04 Pre-RI	GF-SB16 (4-6 ft) 7/20/04 Pre-RI	GF-SB17 (0-4 ft) 7/20/04 Pre-RI	GF-SB17 (8-12 ft) 7/20/04 Pre-RI	GF-SB19 (0-4 ft) 7/21/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)																		
Gasoline Range Hydrocarbons in mg/kg																		
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	5.0 U	5.0 U	5.0 U	190	33	11	5.0 U	18	5.0 U	200	7.8	100	80	49	26	52 J
Oil Range Hydrocarbons in mg/kg	2,000	2,000	11	11	10 U	1,200	67	90	10 U	140	33	1,100	42	640	470	400	88	840
Bunker C in mg/kg	2,000	2,000																
Total TPHs in mg/kg	2,000	2,000	13.5	13.5	ND	1,390	100	101	ND	158	35.5	1,300	49.8	740	550	449	114	892 J
Heavy Metals																		
Arsenic in mg/kg	7	7	6 U	5 U	7 U	10 U	20 U	6 U	6 U	6 U	20 U	5 U	6 U	5 U	5 U	5 U	6 U	5 U
Cadmium in mg/kg	1	1	0.2 U	0.7	0.5	0.5 U	0.7 U	0.2 U	0.2 U	0.6	0.8 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3
Chromium (Total) in mg/kg	260	260	18.9	29.7	50.4	55.0	50.0	25.9	29.8	34.7	38.0	33.5	32.7	29.6	29.1	40.7	40.6	24.5
Chromium (VI) in mg/kg	48	48																
Copper in mg/kg	36	36	11.6	43.4	155	118	110	19.7	13.3	45.1	121	30.6	18.5	25.7	26.3	25.5	43.9	23.8
Lead in mg/kg	81	81	2	33	30	39	73	11	3	201	293	12	14	7	4	12	55	12
Mercury in mg/kg	0.1	0.1	0.04 U	0.11	0.10	0.17	0.09	0.08	0.06	0.25	0.27	0.16	0.07	0.05	0.09	0.08	0.08	0.08
Nickel in mg/kg	48	48	17	24	43	51	132	23	25	36	41	31	28	31	30	39	37	26
Zinc in mg/kg	85	85	30.6	66.9	114	108	103	67.5	34.5	416	447	58.3	54.5	44.1	41.2	50.3	107	68.4
Conventional Chemistry Parameters (including other metals)																		
Formaldehyde in mg/kg	16,000	700,000																
Iron in mg/kg	56,000	2,500,000																
Manganese in mg/kg	11,000	490,000																
pH in pH units	2.5 - 11	2.5 - 11	8.63	8.20	9.00	11.24	11.65	7.54	7.91	7.53	7.42	8.19	7.77	7.37	7.88	9.09	6.97	8.09
Polycyclic Aromatic Hydrocarbons (PAHs)																		
Acenaphthene in mg/kg	0.26	0.26																
Acenaphthylene in mg/kg																		
Anthracene in mg/kg	3.5	3.5																
Benzo(g,h,i)perylene in mg/kg																		
Dibenzofuran in mg/kg	80	3,500																
Fluoranthene in mg/kg	2.6	2.6																
Fluorene in mg/kg	0.37	0.37																
Phenanthrene in mg/kg																		
Pyrene in mg/kg	16	16																
1-Methylnaphthalene in mg/kg	35	4,500																
2-Methylnaphthalene in mg/kg	320	14,000																
Naphthalene in mg/kg	1.6	1.6																
Total Naphthalenes in mg/kg																		
Benz(a)anthracene in mg/kg	0.12	0.12																
Benzo(a)pyrene in mg/kg	0.14	0.31																
Benzo(b)fluoranthene in mg/kg	0.38	0.38																
Benzo(k)fluoranthene in mg/kg	0.38	0.38																
Chrysene in mg/kg	0.13	0.13																
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58																
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1																
Total cPAHs TEQ in mg/kg	0.14	0.31																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB10 (12-16 ft) 7/21/04 Pre-RI	GF-SB11 (0-4 ft) 7/20/04 Pre-RI	GF-SB11 (4-8 ft) 7/20/04 Pre-RI	GF-SB12 (0-4 ft) 7/20/04 Pre-RI	GF-SB12 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (8-12 ft) 7/20/04 Pre-RI	GF-SB14 (0-4 ft) 7/20/04 Pre-RI	GF-SB14 (8-12 ft) 7/20/04 Pre-RI	GF-SB15 (0-4 ft) 7/20/04 Pre-RI	GF-SB15 (4-8 ft) 7/20/04 Pre-RI	GF-SB16 (0-4 ft) 7/20/04 Pre-RI	GF-SB16 (4-6 ft) 7/20/04 Pre-RI	GF-SB17 (0-4 ft) 7/20/04 Pre-RI	GF-SB17 (8-12 ft) 7/20/04 Pre-RI	GF-SB19 (0-4 ft) 7/21/04 Pre-RI
Other Semivolatiles																		
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013																
1,2-Dichlorobenzene in mg/kg	0.039	0.039																
1,3-Dichlorobenzene in mg/kg																		
1,4-Dichlorobenzene in mg/kg	0.051	0.051																
2,4,5-Trichlorophenol in mg/kg	93	93																
2,4,6-Trichlorophenol in mg/kg	0.015	0.015																
2,4-Dichlorophenol in mg/kg	0.2	0.2																
2,4-Dimethylphenol in mg/kg	0.73	0.73																
2,4-Dinitrophenol in mg/kg	0.4	0.4																
2-Chloronaphthalene in mg/kg	6,400	280,000																
2-Chlorophenol in mg/kg	0.24	0.24																
2-Methylphenol in mg/kg	4,000	180,000																
2-Nitroaniline in mg/kg	800	35,000																
2-Nitrophenol in mg/kg																		
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1																
3-Nitroaniline in mg/kg																		
4,6-Dinitro-2-methylphenol in mg/kg																		
4-Bromophenyl phenyl ether in mg/kg																		
4-Chloro-3-methylphenol in mg/kg																		
4-Chloroaniline in mg/kg	5	660																
4-Chlorophenyl phenyl ether in mg/kg																		
4-Methylphenol in mg/kg	400	18,000																
4-Nitroaniline in mg/kg																		
4-Nitrophenol in mg/kg																		
Benzoic acid in mg/kg	320,000	14,000,000																
Benzyl alcohol in mg/kg	8,000	350,000																
Benzyl butyl phthalate in mg/kg	0.079	0.079																
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900																
Bis(2-chloroethoxy)methane in mg/kg																		
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01																
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8																
Carbazole in mg/kg																		
Diethyl phthalate in mg/kg	1.2	1.2																
Dimethyl phthalate in mg/kg																		
Di-n-butyl phthalate in mg/kg	3.6	3.6																
Di-n-octyl phthalate in mg/kg	270	270																
Hexachlorobenzene in mg/kg	0.26	0.26																
Hexachlorobutadiene in mg/kg	0.17	0.17																
Hexachlorocyclopentadiene in mg/kg	480	3,500																
Hexachloroethane in mg/kg	0.096	0.096																
Isophorone in mg/kg	0.62	0.62																
Nitrobenzene in mg/kg	1.5	1.5																
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01																
N-Nitrosodiphenylamine in mg/kg	0.079	0.079																
Pentachlorophenol in mg/kg	0.1	0.1																
Phenol in mg/kg	160	160																
2,4-Dinitrotoluene in mg/kg	0.01	0.01																
2,6-Dinitrotoluene in mg/kg	80	3,500																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB10 (12-16 ft) 7/21/04 Pre-RI	GF-SB11 (0-4 ft) 7/20/04 Pre-RI	GF-SB11 (4-8 ft) 7/20/04 Pre-RI	GF-SB12 (0-4 ft) 7/20/04 Pre-RI	GF-SB12 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (8-12 ft) 7/20/04 Pre-RI	GF-SB14 (0-4 ft) 7/20/04 Pre-RI	GF-SB14 (8-12 ft) 7/20/04 Pre-RI	GF-SB15 (0-4 ft) 7/20/04 Pre-RI	GF-SB15 (4-8 ft) 7/20/04 Pre-RI	GF-SB16 (0-4 ft) 7/20/04 Pre-RI	GF-SB16 (4-6 ft) 7/20/04 Pre-RI	GF-SB17 (0-4 ft) 7/20/04 Pre-RI	GF-SB17 (8-12 ft) 7/20/04 Pre-RI	GF-SB19 (0-4 ft) 7/21/04 Pre-RI
Volatile Organic Compounds (VOC)																		
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000																
1,1,1-Trichloroethane in mg/kg	28	63																
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000																
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062																
1,1,2-Trichloroethane in mg/kg	0.012	0.024																
1,1-Dichloroethane in mg/kg	2.6	5.7																
1,1-Dichloroethene in mg/kg	0.005	0.005																
1,1-Dichloropropene in mg/kg																		
1,2,3-Trichlorobenzene in mg/kg																		
1,2,3-Trichloropropane in mg/kg	0.033	4.4																
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013																
1,2,4-Trimethylbenzene in mg/kg																		
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160																
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02																
1,2-Dichlorobenzene in mg/kg	0.039	0.039																
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033																
1,2-Dichloropropane in mg/kg	0.016	0.016																
1,3,5-Trimethylbenzene in mg/kg	800	35,000																
1,3-Dichlorobenzene in mg/kg																		
1,3-Dichloropropane in mg/kg																		
1,4-Dichloro-2-Butene in mg/kg																		
1,4-Dichlorobenzene in mg/kg	0.051	0.051																
2,2-Dichloropropane in mg/kg																		
2-Butanone in mg/kg	48,000	2,100,000																
2-Chloroethyl Vinyl Ether in mg/kg																		
2-Chlorotoluene in mg/kg	1,600	70,000																
2-Hexanone in mg/kg																		
4-Chlorotoluene in mg/kg																		
4-Methyl-2-pentanone in mg/kg	6,400	280,000																
Acetone in mg/kg	72,000	3,200,000																
Acrolein in mg/kg	40	1,800																
Acrylonitrile in mg/kg	1.9	240																
Benzene in mg/kg	0.005	0.031																
Bromobenzene in mg/kg																		
Bromochloromethane in mg/kg																		
Bromodichloromethane in mg/kg	0.005	0.005																
Bromoethane in mg/kg																		
Bromoform in mg/kg	0.33	0.33																
Bromomethane in mg/kg	0.0056	0.012																
Carbon disulfide in mg/kg	0.41	0.89																
Carbon tetrachloride in mg/kg	0.005	0.005																
Chlorobenzene in mg/kg	0.38	0.84																
Chloroethane in mg/kg																		
Chloroform in mg/kg	0.005	0.014																
Chloromethane in mg/kg	0.005	0.02																
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3																
cis-1,3-Dichloropropene in mg/kg																		
Dibromochloromethane in mg/kg	0.005	0.005																
Dibromomethane in mg/kg	800	35,000																
Ethylbenzene in mg/kg	7.3	7.3																
Hexachlorobutadiene in mg/kg	0.17	0.17																
Isopropylbenzene in mg/kg	8,000	350,000																
Methylene chloride in mg/kg	0.042	0.26																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB10 (12-16 ft) 7/21/04 Pre-RI	GF-SB11 (0-4 ft) 7/20/04 Pre-RI	GF-SB11 (4-8 ft) 7/20/04 Pre-RI	GF-SB12 (0-4 ft) 7/20/04 Pre-RI	GF-SB12 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (4-8 ft) 7/20/04 Pre-RI	GF-SB13 (8-12 ft) 7/20/04 Pre-RI	GF-SB14 (0-4 ft) 7/20/04 Pre-RI	GF-SB14 (8-12 ft) 7/20/04 Pre-RI	GF-SB15 (0-4 ft) 7/20/04 Pre-RI	GF-SB15 (4-8 ft) 7/20/04 Pre-RI	GF-SB16 (0-4 ft) 7/20/04 Pre-RI	GF-SB16 (4-6 ft) 7/20/04 Pre-RI	GF-SB17 (0-4 ft) 7/20/04 Pre-RI	GF-SB17 (8-12 ft) 7/20/04 Pre-RI	GF-SB19 (0-4 ft) 7/21/04 Pre-RI
Methyliodide in mg/kg																		
n-Butylbenzene in mg/kg																		
n-Propylbenzene in mg/kg	8,000	350,000																
p-Isopropyltoluene in mg/kg																		
sec-Butylbenzene in mg/kg																		
Styrene in mg/kg	1.2	12																
tert-Butylbenzene in mg/kg																		
Tetrachloroethene (PCE) in mg/kg	0.015	0.015																
Toluene in mg/kg	18	18																
trans-1,2-Dichloroethene in mg/kg	0.12	0.26																
trans-1,3-Dichloropropene in mg/kg																		
Trichloroethene (TCE) in mg/kg	0.005	0.015																
Trichlorofluoromethane in mg/kg	24,000	1,100,000																
Vinyl acetate in mg/kg	2.9	6.3																
Vinyl chloride in mg/kg	0.005	0.005																
o-Xylene in mg/kg	1.8	4																
Xylenes (total) in mg/kg	16,000	700,000																
Naphthalene in mg/kg	1.6	1.6																
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1016 in mg/kg																		
Aroclor 1221 in mg/kg																		
Aroclor 1232 in mg/kg																		
Aroclor 1242 in mg/kg																		
Aroclor 1248 in mg/kg																		
Aroclor 1254 in mg/kg																		
Aroclor 1260 in mg/kg																		
Total PCBs in mg/kg	1	10																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB19 (4-8 ft) 7/21/04 Pre-RI	LP-MW02 (2.5-4 ft) 7/16/04 Pre-RI	LP-MW02 (7.5-9 ft) 7/16/04 Pre-RI	LP-SB01 (0-4 ft) 7/16/04 Pre-RI	LP-SB01 (4-8 ft) 7/16/04 Pre-RI	LP-SB03 (0-4 ft) 7/16/04 Pre-RI	LP-SB03 (4-8 ft) 7/16/04 Pre-RI	LP-SB04 (0-4 ft) 7/16/04 Pre-RI	LP-SB04 (4-8 ft) 7/16/04 Pre-RI	LP-SB05 (0-4 ft) 7/16/04 Pre-RI	LP-SB05 (8-12 ft) 7/16/04 Pre-RI	LP-SB06 (0-4 ft) 7/16/04 Pre-RI	LP-SB06 (4-8 ft) 7/16/04 Pre-RI	LP-SB07 FD (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (4-8 ft) 7/16/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)																			
Gasoline Range Hydrocarbons in mg/kg																			
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	9.6 U	46	5.0	36 J	5.0 U	56	5.5	190	7.0	92	5.0 U	67	5.0 U	24	22	9.6
Oil Range Hydrocarbons in mg/kg	2,000	2,000	160	520	55	210 J	13	610	31	1,400	43	510	13	730	31	96	84	80
Bunker C in mg/kg	2,000	2,000																
Total TPHs in mg/kg	2,000	2,000	169.6	566	60	246 J	15.5	666	36.5	1,590	50	602	15.5	797	33.5	120	106	89.6
Heavy Metals																			
Arsenic in mg/kg	7	7	6 U	6 U	6 U	5 U	6 U	6 U	6 U	10 U	6 U	10 U	6 U	6 U	7 U	30 U	20 U	6 U
Cadmium in mg/kg	1	1	0.2 U	0.2 UJ	0.2 UJ	0.2 UJ	0.3 J	0.5 J	0.3 J	0.6 U	0.4	0.5 UJ	0.3 J	0.3 U	0.3 U	1 U	0.7 U	0.3
Chromium (Total) in mg/kg	260	260	35.9	32.1	27.7	33.2	28.7	148	50.7	249 J	117 J	188	42.7	57.7 J	29.0 J	106 J	90.3 J	68.8 J
Chromium (VI) in mg/kg	48	48		0.119 U	0.132 U	0.126 U	0.136 U	0.127 U	0.137 U	0.118 U	0.131 U	0.778	2.14	0.135 U	0.139 U	0.828	0.695	0.145 U
Copper in mg/kg	36	36	22.6	13.3 J	20.1	23.2 J	16.9 J	53.8 J	15.8 J	30.7	37.1	73.1 J	41.2 J	76.6	20.8	80	124	22.5
Lead in mg/kg	81	81	5	9	3	11	5	604	8	11	13	29	7	41	5	130	164	10
Mercury in mg/kg	0.1	0.1	0.06	0.05	0.05 U	0.05 U	0.06 U	0.31	0.10	0.05 U	0.07	0.14	0.11	0.25	0.12	0.06 U	0.07 U	0.05 U
Nickel in mg/kg	48	48	35	18	25	29	29	19	24	20	45	28	40	95	29	81	80	29
Zinc in mg/kg	85	85	49.2	33.0	37.6	43.4	42.4	135	73.9	51	68.6	106	66.7	67.4	35.9	105	100	45.8
Conventional Chemistry Parameters (including other metals)																			
Formaldehyde in mg/kg	16,000	700,000				45.9		63.4			299	120		5.62		1.65 U	1.76 U	
Iron in mg/kg	56,000	2,500,000		12,100	18,300	18,400	17,200	15,800	15,400	20,000	29,000	21,800	29,900	19,800	17,700	21,200	20,200	20,300
Manganese in mg/kg	11,000	490,000		177	306	353	260	262	247	418	444	2,660	486	3,490	472	6,390	6,390	391
pH in pH units	2.5 - 11	2.5 - 11	7.83	8.29	9.24	7.55	8.18	7.69	8.59	12.23	9.35	11.20	8.94	11.99	11.10	11.73	11.68	10.15
Polycyclic Aromatic Hydrocarbons (PAHs)																			
Acenaphthene in mg/kg	0.26	0.26		0.04	0.0078 U	0.022 U	0.018	0.014	0.034	0.16	0.042	0.008 U	0.0093 U	0.026 U	0.0092 U	0.009 U	0.0098 U	0.062
Acenaphthylene in mg/kg				0.0076 U	0.0078 U	0.022 U	0.0084 U	0.0076 U	0.0085 U	0.075 U	0.0068 U	0.008 U	0.0093 U	0.026 U	0.0092 U	0.009 U	0.0098 U	0.009 U
Anthracene in mg/kg	3.5	3.5		0.018	0.0078 U	0.022 U	0.011	0.014	0.039	0.14	0.011	0.008 U	0.0093 U	0.026 U	0.0092 U	0.009 U	0.0098 U	0.009 U
Benzo(g,h,i)perylene in mg/kg				0.0076 U	0.0078 U	0.022 U	0.0084 U	0.013	0.019	0.075 U	0.0068 U	0.008 U	0.0093 U	0.026 U	0.0092 U	0.009 U	0.0098 U	0.009 U
Dibenzofuran in mg/kg	80	3,500		0.011	0.0078 U	0.022 U	0.0084 U	0.0083	0.018	0.078 J	0.068 U	0.48 U	0.0093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Fluoranthene in mg/kg	2.6	2.6		0.2	0.0078 U	0.022 U	0.02	0.07	0.096	0.9	0.066	0.011	0.016	0.034	0.01	0.038	0.038	0.012
Fluorene in mg/kg	0.37	0.37		0.021	0.0078 U	0.022 U	0.012	0.018	0.034	0.12	0.031	0.008 U	0.0093 U	0.026 U	0.0092 U	0.009 U	0.0098 U	0.015
Phenanthrene in mg/kg				0.079	0.0078 U	0.068	0.035	0.11	0.13	0.9	0.048	0.0096	0.016	0.056	0.0092 U	0.027	0.033	0.014
Pyrene in mg/kg	16	16		0.17	0.0078 U	0.031	0.021	0.11	0.099	0.58	0.056	0.025	0.015	0.052	0.011	0.026	0.028	0.014
1-Methylnaphthalene in mg/kg	35	4,500		0.0076 U	0.0078 U	0.065	0.013	0.015	0.012	0.089	0.019	0.008 U	0.0093 U	0.04	0.0092 U	0.02	0.029	0.013
2-Methylnaphthalene in mg/kg	320	14,000		0.01	0.0078 U	0.078	0.0084 U	0.018	0.0089	0.18	0.015	0.008 U	0.0093 U	0.059	0.0092 U	0.027	0.038	0.009 U
Naphthalene in mg/kg	1.6	1.6		0.0079	0.0078 U	0.023	0.16	0.022	0.021	0.69	0.12	0.008 U	0.015	0.035	0.0092 U	0.015	0.017	0.044
Total Naphthalenes in mg/kg				0.0217	ND	0.166	0.177	0.055	0.0419	0.959	0.154	ND	0.0243	0.134	ND	0.062	0.084	0.0615
Benz(a)anthracene in mg/kg	0.12	0.12		0.04	0.0078 U	0.022 U	0.0084 U	0.03	0.037	0.33	0.011	0.008 U	0.0093 U	0.026 U	0.0092 U	0.011	0.01	0.009 U
Benzo(a)pyrene in mg/kg	0.14	0.31		0.031	0.0078 U	0.022 U	0.0084 U	0.05	0.033	0.13	0.0071	0.008 U	0.0093 U	0.026 U	0.0092 U	0.012	0.0098 U	0.009 U
Benzo(b)fluoranthene in mg/kg	0.38	0.38		0.044 J	0.0078 U	0.022 U	0.0084 U	0.07 J	0.024	0.25	0.011	0.008 U	0.0093 U	0.026 U	0.0092 U	0.016	0.0098 U	0.009 U
Benzo(k)fluoranthene in mg/kg	0.38	0.38		0.044 J	0.0078 U	0.022 U	0.0084 U	0.07 J	0.024	0.18	0.0061 J	0.008 U	0.0093 U	0.026 U	0.0092 U	0.016	0.0098 U	0.009 U
Chrysene in mg/kg	0.13	0.13		0.066	0.0078 U	0.029	0.0084 U	0.081	0.042	0.58	0.015	0.035	0.0093 U	0.058	0.0092 U	0.028	0.026	0.009 U
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58		0.0076 U	0.0078 U	0.022 U	0.0084 U	0.0076 U	0.0085 U	0.075 U	0.0068 U	0.008 U	0.0093 U	0.026 U	0.0092 U	0.009 U	0.0098 U	0.009 U
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1		0.0076 U	0.0078 U	0.022 U	0.0084 U	0.0076 U	0.015	0.075 U	0.0068 U	0.008 U	0.0093 U	0.026 U	0.0092 U	0.009 U	0.0098 U	0.009 U
Total cPAHs TEQ in mg/kg	0.14	0.31		0.0452	ND	0.0168	ND	0.0686	0.0438	0.219	0.0107	0.00635	ND	0.0201	ND	0.0175	0.00812	ND

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB19 (4-8 ft) 7/21/04 Pre-RI	LP-MW02 (2.5-4 ft) 7/16/04 Pre-RI	LP-MW02 (7.5-9 ft) 7/16/04 Pre-RI	LP-SB01 (0-4 ft) 7/16/04 Pre-RI	LP-SB01 (4-8 ft) 7/16/04 Pre-RI	LP-SB03 (0-4 ft) 7/16/04 Pre-RI	LP-SB03 (4-8 ft) 7/16/04 Pre-RI	LP-SB04 (0-4 ft) 7/16/04 Pre-RI	LP-SB04 (4-8 ft) 7/16/04 Pre-RI	LP-SB05 (0-4 ft) 7/16/04 Pre-RI	LP-SB05 (8-12 ft) 7/16/04 Pre-RI	LP-SB06 (0-4 ft) 7/16/04 Pre-RI	LP-SB06 (4-8 ft) 7/16/04 Pre-RI	LP-SB07 FD (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (4-8 ft) 7/16/04 Pre-RI
Other Semivolatiles																		
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
1,2-Dichlorobenzene in mg/kg	0.039	0.039		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
1,3-Dichlorobenzene in mg/kg				0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
1,4-Dichlorobenzene in mg/kg	0.051	0.051		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
2,4,5-Trichlorophenol in mg/kg	93	93		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
2,4,6-Trichlorophenol in mg/kg	0.015	0.015		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
2,4-Dichlorophenol in mg/kg	0.2	0.2		1.4 U	0.23 U	1.3 U	0.25 U	1.4 U	0.26 U	0.22 UJ	0.2 U	1.4 U	0.28 U	0.26 U	0.27 U	0.27 U	0.3 U	0.27 U
2,4-Dimethylphenol in mg/kg	0.73	0.73		1.4 U	0.23 U	1.3 U	0.25 U	1.4 U	0.26 U	0.22 UJ	0.71	1.4 U	0.28 U	0.26 U	0.27 U	0.27 U	0.3 U	0.27 U
2,4-Dinitrophenol in mg/kg	0.4	0.4		4.6 U	0.78 U	4.5 U	0.84 U	4.6 U	0.85 U	0.75 UJ	0.68 U	4.8 U	0.93 U	0.88 U	0.92 U	0.9 U	0.98 U	0.9 U
2-Chloronaphthalene in mg/kg	6,400	280,000		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
2-Chlorophenol in mg/kg	0.24	0.24		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
2-Methylphenol in mg/kg	4,000	180,000		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
2-Nitroaniline in mg/kg	800	35,000		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
2-Nitrophenol in mg/kg				2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
3-Nitroaniline in mg/kg				2.7 U	0.47 U	2.7 U	0.51 U	2.7 U	0.51 U	0.45 UJ	0.41 U	2.9 U	0.56 U	0.53 U	0.55 U	0.54 U	0.59 U	0.54 U
4,6-Dinitro-2-methylphenol in mg/kg				4.6 U	0.78 U	4.5 U	0.84 U	4.6 U	0.85 U	0.75 UJ	0.68 U	4.8 U	0.93 U	0.88 U	0.92 U	0.9 U	0.98 U	0.9 U
4-Bromophenyl phenyl ether in mg/kg				0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
4-Chloro-3-methylphenol in mg/kg				0.91 U	0.16 U	0.9 U	0.17 U	0.91 U	0.17 U	0.15 UJ	0.14 U	0.96 U	0.19 U	0.18 U	0.18 U	0.18 U	0.2 U	0.18 U
4-Chloroaniline in mg/kg	5	660		1.4 U	0.23 U	1.3 U	0.25 U	1.4 U	0.26 U	0.22 UJ	0.2 U	1.4 U	0.28 U	0.26 U	0.27 U	0.27 U	0.3 U	0.27 U
4-Chlorophenyl phenyl ether in mg/kg				0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
4-Methylphenol in mg/kg	400	18,000		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
4-Nitroaniline in mg/kg				2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
4-Nitrophenol in mg/kg				2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
Benzoic acid in mg/kg	320,000	14,000,000		4.6 U	0.78 U	4.5 U	0.84 U	4.6 U	0.85 U	0.75 UJ	0.68 U	4.8 U	0.93 U	0.88 U	0.92 U	0.9 U	0.98 U	0.9 U
Benzyl alcohol in mg/kg	8,000	350,000		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
Benzyl butyl phthalate in mg/kg	0.079	0.079		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Bis(2-chloroethoxy)methane in mg/kg				0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01		0.91 U	0.16 U	0.9 U	0.17 U	0.91 U	0.17 U	0.15 UJ	0.14 U	0.96 U	0.19 U	0.18 U	0.18 U	0.18 U	0.2 U	0.18 U
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Carbazole in mg/kg				0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Diethyl phthalate in mg/kg	1.2	1.2		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Dimethyl phthalate in mg/kg				0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Di-n-butyl phthalate in mg/kg	3.6	3.6		0.46 U	0.078 J	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Di-n-octyl phthalate in mg/kg	270	270		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Hexachlorobenzene in mg/kg	0.26	0.26		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Hexachlorobutadiene in mg/kg	0.17	0.17		0.91 U	0.16 U	0.9 U	0.17 U	0.91 U	0.17 U	0.15 UJ	0.14 U	0.96 U	0.19 U	0.18 U	0.18 U	0.18 U	0.2 U	0.18 U
Hexachlorocyclopentadiene in mg/kg	480	3,500		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
Hexachloroethane in mg/kg	0.096	0.096		0.91 U	0.16 U	0.9 U	0.17 U	0.91 U	0.17 U	0.15 UJ	0.14 U	0.96 U	0.19 U	0.18 U	0.18 U	0.18 U	0.2 U	0.18 U
Isophorone in mg/kg	0.62	0.62		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Nitrobenzene in mg/kg	1.5	1.5		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01		0.91 U	0.16 U	0.9 U	0.17 U	0.91 U	0.17 U	0.15 UJ	0.14 U	0.96 U	0.19 U	0.18 U	0.18 U	0.18 U	0.2 U	0.18 U
N-Nitrosodiphenylamine in mg/kg	0.079	0.079		0.46 U	0.078 U	0.45 U	0.084 U	0.46 U	0.085 U	0.075 UJ	0.068 U	0.48 U	0.093 U	0.088 U	0.092 U	0.09 U	0.098 U	0.09 U
Pentachlorophenol in mg/kg	0.1	0.1		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
Phenol in mg/kg	160	160		0.91 U	0.16 U	0.9 U	0.17 U	0.91 U	0.17 U	0.15 UJ	0.14 U	0.96 U	0.19 U	0.18 U	0.18 U	0.18 U	0.2 U	0.18 U
2,4-Dinitrotoluene in mg/kg	0.01	0.01		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U
2,6-Dinitrotoluene in mg/kg	80	3,500		2.3 U	0.39 U	2.2 U	0.42 U	2.3 U	0.43 U	0.37 UJ	0.34 U	2.4 U	0.47 U	0.44 U	0.46 U	0.45 U	0.49 U	0.45 U

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB19 (4-8 ft) 7/21/04 Pre-RI	LP-MW02 (2.5-4 ft) 7/16/04 Pre-RI	LP-MW02 (7.5-9 ft) 7/16/04 Pre-RI	LP-SB01 (0-4 ft) 7/16/04 Pre-RI	LP-SB01 (4-8 ft) 7/16/04 Pre-RI	LP-SB03 (0-4 ft) 7/16/04 Pre-RI	LP-SB03 (4-8 ft) 7/16/04 Pre-RI	LP-SB04 (0-4 ft) 7/16/04 Pre-RI	LP-SB04 (4-8 ft) 7/16/04 Pre-RI	LP-SB05 (0-4 ft) 7/16/04 Pre-RI	LP-SB05 (8-12 ft) 7/16/04 Pre-RI	LP-SB06 (0-4 ft) 7/16/04 Pre-RI	LP-SB06 (4-8 ft) 7/16/04 Pre-RI	LP-SB07 FD (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (4-8 ft) 7/16/04 Pre-RI
Volatile Organic Compounds (VOC)																		
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000																
1,1,1-Trichloroethane in mg/kg	28	63																
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000																
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062																
1,1,2-Trichloroethane in mg/kg	0.012	0.024																
1,1-Dichloroethane in mg/kg	2.6	5.7																
1,1-Dichloroethene in mg/kg	0.005	0.005																
1,1-Dichloropropene in mg/kg																		
1,2,3-Trichlorobenzene in mg/kg																		
1,2,3-Trichloropropane in mg/kg	0.033	4.4																
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013																
1,2,4-Trimethylbenzene in mg/kg																		
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160																
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02																
1,2-Dichlorobenzene in mg/kg	0.039	0.039																
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033																
1,2-Dichloropropane in mg/kg	0.016	0.016																
1,3,5-Trimethylbenzene in mg/kg	800	35,000																
1,3-Dichlorobenzene in mg/kg																		
1,3-Dichloropropane in mg/kg																		
1,4-Dichloro-2-Butene in mg/kg																		
1,4-Dichlorobenzene in mg/kg	0.051	0.051																
2,2-Dichloropropane in mg/kg																		
2-Butanone in mg/kg	48,000	2,100,000																
2-Chloroethyl Vinyl Ether in mg/kg																		
2-Chlorotoluene in mg/kg	1,600	70,000																
2-Hexanone in mg/kg																		
4-Chlorotoluene in mg/kg																		
4-Methyl-2-pentanone in mg/kg	6,400	280,000																
Acetone in mg/kg	72,000	3,200,000																
Acrolein in mg/kg	40	1,800																
Acrylonitrile in mg/kg	1.9	240																
Benzene in mg/kg	0.005	0.031																
Bromobenzene in mg/kg																		
Bromochloromethane in mg/kg																		
Bromodichloromethane in mg/kg	0.005	0.005																
Bromoethane in mg/kg																		
Bromoform in mg/kg	0.33	0.33																
Bromomethane in mg/kg	0.0056	0.012																
Carbon disulfide in mg/kg	0.41	0.89																
Carbon tetrachloride in mg/kg	0.005	0.005																
Chlorobenzene in mg/kg	0.38	0.84																
Chloroethane in mg/kg																		
Chloroform in mg/kg	0.005	0.014																
Chloromethane in mg/kg	0.005	0.02																
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3																
cis-1,3-Dichloropropene in mg/kg																		
Dibromochloromethane in mg/kg	0.005	0.005																
Dibromomethane in mg/kg	800	35,000																
Ethylbenzene in mg/kg	7.3	7.3																
Hexachlorobutadiene in mg/kg	0.17	0.17																
Isopropylbenzene in mg/kg	8,000	350,000																
Methylene chloride in mg/kg	0.042	0.26																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	GF-SB19 (4-8 ft) 7/21/04 Pre-RI	LP-MW02 (2.5-4 ft) 7/16/04 Pre-RI	LP-MW02 (7.5-9 ft) 7/16/04 Pre-RI	LP-SB01 (0-4 ft) 7/16/04 Pre-RI	LP-SB01 (4-8 ft) 7/16/04 Pre-RI	LP-SB03 (0-4 ft) 7/16/04 Pre-RI	LP-SB03 (4-8 ft) 7/16/04 Pre-RI	LP-SB04 (0-4 ft) 7/16/04 Pre-RI	LP-SB04 (4-8 ft) 7/16/04 Pre-RI	LP-SB05 (0-4 ft) 7/16/04 Pre-RI	LP-SB05 (8-12 ft) 7/16/04 Pre-RI	LP-SB06 (0-4 ft) 7/16/04 Pre-RI	LP-SB06 (4-8 ft) 7/16/04 Pre-RI	LP-SB07 FD (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (0-4 ft) 7/16/04 Pre-RI	LP-SB07 (4-8 ft) 7/16/04 Pre-RI
Methyliodide in mg/kg																		
n-Butylbenzene in mg/kg																		
n-Propylbenzene in mg/kg	8,000	350,000																
p-Isopropyltoluene in mg/kg																		
sec-Butylbenzene in mg/kg																		
Styrene in mg/kg	1.2	12																
tert-Butylbenzene in mg/kg																		
Tetrachloroethene (PCE) in mg/kg	0.015	0.015																
Toluene in mg/kg	18	18																
trans-1,2-Dichloroethene in mg/kg	0.12	0.26																
trans-1,3-Dichloropropene in mg/kg																		
Trichloroethene (TCE) in mg/kg	0.005	0.015																
Trichlorofluoromethane in mg/kg	24,000	1,100,000																
Vinyl acetate in mg/kg	2.9	6.3																
Vinyl chloride in mg/kg	0.005	0.005																
o-Xylene in mg/kg	1.8	4																
Xylenes (total) in mg/kg	16,000	700,000																
Naphthalene in mg/kg	1.6	1.6																
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1016 in mg/kg																		
Aroclor 1221 in mg/kg																		
Aroclor 1232 in mg/kg																		
Aroclor 1242 in mg/kg																		
Aroclor 1248 in mg/kg																		
Aroclor 1254 in mg/kg																		
Aroclor 1260 in mg/kg																		
Total PCBs in mg/kg	1	10																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB08 (4-8 ft) 7/23/04 Pre-RI	LW-SB01 (0-4 ft) 7/21/04 Pre-RI	LW-SB01 (4-8 ft) 7/21/04 Pre-RI	LW-SB02 (0-4 ft) 7/21/04 Pre-RI	LW-SB02 (4-8 ft) 7/21/04 Pre-RI	LW-SB03 (0-4 ft) 7/23/04 Pre-RI	LW-SB03 (4-8 ft) 7/23/04 Pre-RI	LW-SB04 (0-4 ft) 7/22/04 Pre-RI	LW-SB04 (4-8 ft) 7/22/04 Pre-RI	LW-SS01 FD (0-0.5 ft) 7/20/04 Pre-RI	LW-SS01 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS02 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS03 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS04 (0-0.5 ft) 7/20/04 Pre-RI	SC-MW01 (0.5-2 ft) 7/20/04 Pre-RI	SC-MW01 (10-11.5 ft) 7/20/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)																		
Gasoline Range Hydrocarbons in mg/kg																		
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	15														50 U	69
Oil Range Hydrocarbons in mg/kg	2,000	2,000	140														1,000	140
Bunker C in mg/kg	2,000	2,000															4,700	
Total TPHs in mg/kg	2,000	2,000	155														4,700	209
Heavy Metals																		
Arsenic in mg/kg	7	7	10 U	10 U	6 U	20 U	6 U	6 U	5 U	5 U	6 U	10 U	10 U	10	10 U	10 U	10 U	6 U
Cadmium in mg/kg	1	1	0.5 U	0.6 U	0.2 U	0.6 U	0.3 U	0.7	0.2 U	0.2 U	0.3	0.5 U	0.5 U	1.0	0.6	1.4	0.5 U	0.2 U
Chromium (Total) in mg/kg	260	260	29.9	43	39.0	48.9	35.3	844	390 J	140 J	60.4 J	25.9	24.9	173	1,560	722	15.9	53.9
Chromium (VI) in mg/kg	48	48	0.131 U	0.600	0.521	0.127 U	0.138 U	0.121 U	0.116 U	0.123 U	0.146 U	0.108 U	0.112 U	0.105 U	0.124 U	0.123	0.114 U	0.124 U
Copper in mg/kg	36	36	23.8	72.7	29.1	49.1	20.8	58.0	31.3 J	23.4 J	39.0 J	35.1	36.6	88.4	66.5	53.3	39.5	45.1
Lead in mg/kg	81	81	5 U	171	16	15	7	97	19 J	5 J	13 J	6	6	54	53	80	5 U	53
Mercury in mg/kg	0.1	0.1	0.05 U	0.25 J	0.08 J	0.23 J	0.08 J	0.27	0.08	0.04	0.06	0.18 J	0.19 J	0.57 J	0.34 J	0.29 J	0.05 UJ	0.08 J
Nickel in mg/kg	48	48	47	46	35	46	25	48	32	28	41	34	30	52	24	36	18	49
Zinc in mg/kg	85	85	58	61 J	61.7 J	74 J	37.6 J	251	81.9 J	91.8 J	58.9 J	75 J	71 J	377 J	489 J	1,450 J	59 J	120 J
Conventional Chemistry Parameters (including other metals)																		
Formaldehyde in mg/kg	16,000	700,000		6.51			36.4	19.7			150 J	11.1	9.26	18.1	15.8	11.7		
Iron in mg/kg	56,000	2,500,000	28,900	18,400	20,300	32,800	16,100	26,000	20,300	18,600	26,600	28,500	25,600	39,500	42,400	29,500		
Manganese in mg/kg	11,000	490,000	411	2,780	611	481	286	585	450	318	518	500	452	544	461	468		
pH in pH units	2.5 - 11	2.5 - 11	10.07	11.85	10.38	8.06	8.05	7.45	10.36	7.58	8.44	6.85	7.00	7.49	5.21	7.76	11.37	7.87
Polycyclic Aromatic Hydrocarbons (PAHs)																		
Acenaphthene in mg/kg	0.26	0.26	0.035	0.0082 U	0.0084 U	0.0089 U	0.0084 U	0.066	0.1	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.24	2.4	0.0091		
Acenaphthylene in mg/kg			0.015 U	0.0082 U	0.0084 U	0.0089 U	0.0084 U	0.022 U	0.0076 U	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.039	0.049	0.015		
Anthracene in mg/kg	3.5	3.5	0.015 U	0.016	0.0084 U	0.0089 U	0.0084 U	0.067	0.18	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.3	2.4	0.046		
Benzo(g,h,i)perylene in mg/kg			0.015 U	0.0082 U	0.0084 U	0.0089 U	0.0084 U	0.2	0.23	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.57	15	0.022		
Dibenzofuran in mg/kg	80	3,500	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.22	0.075 U		
Fluoranthene in mg/kg	2.6	2.6	0.017	0.037	0.03	0.037	0.012	0.68	0.9	0.0073 U	0.0092 U	0.011	0.016	2.7	22	0.11		
Fluorene in mg/kg	0.37	0.37	0.031	0.0082 U	0.0084 U	0.0089 U	0.0084 U	0.024	0.069	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.082	0.57	0.011		
Phenanthrene in mg/kg			0.079	0.09	0.048	0.053	0.024	0.24	0.63	0.0073 U	0.0092 U	0.012	0.018	1.1	8.8	0.084		
Pyrene in mg/kg	16	16	0.015 U	0.08	0.054	0.05	0.016	0.52	0.81	0.025	0.0092 U	0.0081	0.012	2.3	20	0.085		
1-Methylnaphthalene in mg/kg	35	4,500	0.017	0.026	0.0084 U	0.046	0.026	0.022 U	0.04	0.009	0.012	0.0068 U	0.0068 U	0.022	0.063	0.0076 U		
2-Methylnaphthalene in mg/kg	320	14,000	0.027	0.03	0.0084 U	0.08	0.041	0.022 U	0.088	0.019	0.022	0.0068 U	0.0068 U	0.042	0.14	0.015		
Naphthalene in mg/kg	1.6	1.6	0.024	0.012	0.0093	0.025	0.011	0.022 U	0.3	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.048	0.17	0.014		
Total Naphthalenes in mg/kg			0.068	0.068	0.0177	0.151	0.078	ND	0.428	0.0316	0.0386	ND	ND	0.112	0.373	0.0328		
Benz(a)anthracene in mg/kg	0.12	0.12	0.015 U	0.027	0.012	0.016	0.0084 U	0.41	0.71	0.0073 U	0.0092 U	0.0068 U	0.0068 U	1.8	17	0.038		
Benzo(a)pyrene in mg/kg	0.14	0.31	0.015 U	0.025	0.012	0.022	0.011	0.63	0.76	0.0073 U	0.0092 U	0.0068 U	0.0068 U	2.4	22	0.049		
Benzo(b)fluoranthene in mg/kg	0.38	0.38	0.015 U	0.026	0.012	0.036	0.016	0.62	0.59	0.0073 U	0.0092 U	0.0068 U	0.0068 U	2.2	20	0.073		
Benzo(k)fluoranthene in mg/kg	0.38	0.38	0.015 U	0.02	0.0093	0.036	0.016	0.53	0.72	0.0073 U	0.0092 U	0.0068 U	0.0068 U	2.1	16	0.073		
Chrysene in mg/kg	0.13	0.13	0.015 U	0.048	0.018	0.046	0.023	0.42	0.69	0.027	0.0092 U	0.0068 U	0.01	1.9	17	0.053		
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58	0.015 U	0.0082 U	0.0084 U	0.0089 U	0.0084 U	0.058	0.081	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.25	1.5	0.0076 U		
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1	0.015 U	0.0082 U	0.0084 U	0.0089 U	0.0084 U	0.18	0.24	0.0073 U	0.0092 U	0.0068 U	0.0068 U	0.56	13	0.02		
Total cPAHs TEQ in mg/kg	0.14	0.31	ND	0.0336	0.0164	0.0322	0.0157	0.814	1.001	0.00575	ND	ND	0.0052	3.111	28.95	0.0703		

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB08 (4-8 ft) 7/23/04 Pre-RI	LW-SB01 (0-4 ft) 7/21/04 Pre-RI	LW-SB01 (4-8 ft) 7/21/04 Pre-RI	LW-SB02 (0-4 ft) 7/21/04 Pre-RI	LW-SB02 (4-8 ft) 7/21/04 Pre-RI	LW-SB03 (0-4 ft) 7/23/04 Pre-RI	LW-SB03 (4-8 ft) 7/23/04 Pre-RI	LW-SB04 (0-4 ft) 7/22/04 Pre-RI	LW-SB04 (4-8 ft) 7/22/04 Pre-RI	LW-SS01 FD (0-0.5 ft) 7/20/04 Pre-RI	LW-SS01 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS02 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS03 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS04 (0-0.5 ft) 7/20/04 Pre-RI	SC-MW01 (0.5-2 ft) 7/20/04 Pre-RI	SC-MW01 (10-11.5 ft) 7/20/04 Pre-RI
Other Semivolatiles																		
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
1,3-Dichlorobenzene in mg/kg			0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
2,4,5-Trichlorophenol in mg/kg	93	93	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
2,4,6-Trichlorophenol in mg/kg	0.015	0.015	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
2,4-Dichlorophenol in mg/kg	0.2	0.2	0.23 U	0.24 U	0.25 U	0.27 U	0.25 U	0.22 U	0.23 U	0.22 U	0.28 U	0.2 U	0.2 U	0.2 U	0.22 U	0.23 U		
2,4-Dimethylphenol in mg/kg	0.73	0.73	0.23 U	0.24 U	0.25 U	0.27 U	0.25 U	0.22 U	0.23 U	0.22 U	0.28 U	0.2 U	0.2 U	0.2 U	0.22 U	0.23 U		
2,4-Dinitrophenol in mg/kg	0.4	0.4	0.77 U	0.82 U	0.85 U	0.89 U	0.84 U	0.73 U	0.75 U	0.73 U	0.92 U	0.68 U	0.68 U	0.68 U	0.73 U	0.75 U		
2-Chloronaphthalene in mg/kg	6,400	280,000	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
2-Chlorophenol in mg/kg	0.24	0.24	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
2-Methylphenol in mg/kg	4,000	180,000	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
2-Nitroaniline in mg/kg	800	35,000	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
2-Nitrophenol in mg/kg			0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
3-Nitroaniline in mg/kg			0.46 U	0.49 U	0.51 U	0.53 U	0.51 U	0.44 U	0.45 U	0.44 U	0.55 U	0.41 U	0.41 U	0.41 U	0.44 U	0.45 U		
4,6-Dinitro-2-methylphenol in mg/kg			0.77 U	0.82 U	0.85 U	0.89 U	0.84 U	0.73 U	0.75 U	0.73 U	0.92 U	0.68 U	0.68 U	0.68 U	0.73 U	0.75 U		
4-Bromophenyl phenyl ether in mg/kg			0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
4-Chloro-3-methylphenol in mg/kg			0.15 U	0.16 U	0.17 U	0.18 U	0.17 U	0.15 U	0.15 U	0.15 U	0.18 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U		
4-Chloroaniline in mg/kg	5	660	0.23 U	0.24 U	0.25 U	0.27 U	0.25 U	0.22 U	0.23 U	0.22 U	0.28 U	0.2 U	0.2 U	0.2 U	0.22 U	0.23 U		
4-Chlorophenyl phenyl ether in mg/kg			0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
4-Methylphenol in mg/kg	400	18,000	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
4-Nitroaniline in mg/kg			0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
4-Nitrophenol in mg/kg			0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
Benzoic acid in mg/kg	320,000	14,000,000	0.77 U	0.82 U	0.85 U	0.89 U	0.84 U	0.73 U	0.75 U	0.73 U	0.92 U	0.68 U	0.68 U	0.68 U	0.73 U	0.75 U		
Benzyl alcohol in mg/kg	8,000	350,000	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
Benzyl butyl phthalate in mg/kg	0.079	0.079	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Bis(2-chloroethoxy)methane in mg/kg			0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01	0.15 U	0.16 U	0.17 U	0.18 U	0.17 U	0.15 U	0.15 U	0.15 U	0.18 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U		
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	1	0.98	0.073 U	0.092 U	0.068 U	0.068 U	0.36	1.4	0.14		
Carbazole in mg/kg			0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.14	1.1	0.075 U		
Diethyl phthalate in mg/kg	1.2	1.2	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Dimethyl phthalate in mg/kg			0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.37	0.073 U	0.075 U		
Di-n-butyl phthalate in mg/kg	3.6	3.6	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Di-n-octyl phthalate in mg/kg	270	270	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Hexachlorobenzene in mg/kg	0.26	0.26	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Hexachlorobutadiene in mg/kg	0.17	0.17	0.15 U	0.16 U	0.17 U	0.18 U	0.17 U	0.15 U	0.15 U	0.15 U	0.18 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U		
Hexachlorocyclopentadiene in mg/kg	480	3,500	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
Hexachloroethane in mg/kg	0.096	0.096	0.15 U	0.16 U	0.17 U	0.18 U	0.17 U	0.15 U	0.15 U	0.15 U	0.18 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U		
Isophorone in mg/kg	0.62	0.62	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Nitrobenzene in mg/kg	1.5	1.5	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01	0.15 U	0.16 U	0.17 U	0.18 U	0.17 U	0.15 U	0.15 U	0.15 U	0.18 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U		
N-Nitrosodiphenylamine in mg/kg	0.079	0.079	0.077 U	0.082 U	0.085 U	0.089 U	0.084 U	0.073 U	0.075 U	0.073 U	0.092 U	0.068 U	0.068 U	0.068 U	0.073 U	0.075 U		
Pentachlorophenol in mg/kg	0.1	0.1	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
Phenol in mg/kg	160	160	0.15 U	0.16 U	0.17 U	0.18 U	0.17 U	0.15 U	0.15 U	0.15 U	0.18 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U		
2,4-Dinitrotoluene in mg/kg	0.01	0.01	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		
2,6-Dinitrotoluene in mg/kg	80	3,500	0.39 U	0.41 U	0.42 U	0.44 U	0.42 U	0.37 U	0.38 U	0.37 U	0.46 U	0.34 U	0.34 U	0.34 U	0.37 U	0.38 U		

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB08 (4-8 ft) 7/23/04 Pre-RI	LW-SB01 (0-4 ft) 7/21/04 Pre-RI	LW-SB01 (4-8 ft) 7/21/04 Pre-RI	LW-SB02 (0-4 ft) 7/21/04 Pre-RI	LW-SB02 (4-8 ft) 7/21/04 Pre-RI	LW-SB03 (0-4 ft) 7/23/04 Pre-RI	LW-SB03 (4-8 ft) 7/23/04 Pre-RI	LW-SB04 (0-4 ft) 7/22/04 Pre-RI	LW-SB04 (4-8 ft) 7/22/04 Pre-RI	LW-SS01 FD (0-0.5 ft) 7/20/04 Pre-RI	LW-SS01 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS02 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS03 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS04 (0-0.5 ft) 7/20/04 Pre-RI	SC-MW01 (0.5-2 ft) 7/20/04 Pre-RI	SC-MW01 (10-11.5 ft) 7/20/04 Pre-RI
Volatile Organic Compounds (VOC)																		
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000																
1,1,1-Trichloroethane in mg/kg	28	63																
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000																
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062																
1,1,2-Trichloroethane in mg/kg	0.012	0.024																
1,1-Dichloroethane in mg/kg	2.6	5.7																
1,1-Dichloroethene in mg/kg	0.005	0.005																
1,1-Dichloropropene in mg/kg																		
1,2,3-Trichlorobenzene in mg/kg																		
1,2,3-Trichloropropane in mg/kg	0.033	4.4																
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013																
1,2,4-Trimethylbenzene in mg/kg																		
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160																
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02																
1,2-Dichlorobenzene in mg/kg	0.039	0.039																
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033																
1,2-Dichloropropane in mg/kg	0.016	0.016																
1,3,5-Trimethylbenzene in mg/kg	800	35,000																
1,3-Dichlorobenzene in mg/kg																		
1,3-Dichloropropane in mg/kg																		
1,4-Dichloro-2-Butene in mg/kg																		
1,4-Dichlorobenzene in mg/kg	0.051	0.051																
2,2-Dichloropropane in mg/kg																		
2-Butanone in mg/kg	48,000	2,100,000																
2-Chloroethyl Vinyl Ether in mg/kg																		
2-Chlorotoluene in mg/kg	1,600	70,000																
2-Hexanone in mg/kg																		
4-Chlorotoluene in mg/kg																		
4-Methyl-2-pentanone in mg/kg	6,400	280,000																
Acetone in mg/kg	72,000	3,200,000																
Acrolein in mg/kg	40	1,800																
Acrylonitrile in mg/kg	1.9	240																
Benzene in mg/kg	0.005	0.031																
Bromobenzene in mg/kg																		
Bromochloromethane in mg/kg																		
Bromodichloromethane in mg/kg	0.005	0.005																
Bromoethane in mg/kg																		
Bromoform in mg/kg	0.33	0.33																
Bromomethane in mg/kg	0.0056	0.012																
Carbon disulfide in mg/kg	0.41	0.89																
Carbon tetrachloride in mg/kg	0.005	0.005																
Chlorobenzene in mg/kg	0.38	0.84																
Chloroethane in mg/kg																		
Chloroform in mg/kg	0.005	0.014																
Chloromethane in mg/kg	0.005	0.02																
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3																
cis-1,3-Dichloropropene in mg/kg																		
Dibromochloromethane in mg/kg	0.005	0.005																
Dibromomethane in mg/kg	800	35,000																
Ethylbenzene in mg/kg	7.3	7.3																
Hexachlorobutadiene in mg/kg	0.17	0.17																
Isopropylbenzene in mg/kg	8,000	350,000																
Methylene chloride in mg/kg	0.042	0.26																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	LP-SB08 (4-8 ft) 7/23/04 Pre-RI	LW-SB01 (0-4 ft) 7/21/04 Pre-RI	LW-SB01 (4-8 ft) 7/21/04 Pre-RI	LW-SB02 (0-4 ft) 7/21/04 Pre-RI	LW-SB02 (4-8 ft) 7/21/04 Pre-RI	LW-SB03 (0-4 ft) 7/23/04 Pre-RI	LW-SB03 (4-8 ft) 7/23/04 Pre-RI	LW-SB04 (0-4 ft) 7/22/04 Pre-RI	LW-SB04 (4-8 ft) 7/22/04 Pre-RI	LW-SS01 FD (0-0.5 ft) 7/20/04 Pre-RI	LW-SS01 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS02 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS03 (0-0.5 ft) 7/20/04 Pre-RI	LW-SS04 (0-0.5 ft) 7/20/04 Pre-RI	SC-MW01 (0.5-2 ft) 7/20/04 Pre-RI	SC-MW01 (10-11.5 ft) 7/20/04 Pre-RI
Methyliodide in mg/kg																		
n-Butylbenzene in mg/kg																		
n-Propylbenzene in mg/kg	8,000	350,000																
p-Isopropyltoluene in mg/kg																		
sec-Butylbenzene in mg/kg																		
Styrene in mg/kg	1.2	12																
tert-Butylbenzene in mg/kg																		
Tetrachloroethene (PCE) in mg/kg	0.015	0.015																
Toluene in mg/kg	18	18																
trans-1,2-Dichloroethene in mg/kg	0.12	0.26																
trans-1,3-Dichloropropene in mg/kg																		
Trichloroethene (TCE) in mg/kg	0.005	0.015																
Trichlorofluoromethane in mg/kg	24,000	1,100,000																
Vinyl acetate in mg/kg	2.9	6.3																
Vinyl chloride in mg/kg	0.005	0.005																
o-Xylene in mg/kg	1.8	4																
Xylenes (total) in mg/kg	16,000	700,000																
Naphthalene in mg/kg	1.6	1.6																
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1016 in mg/kg																		
Aroclor 1221 in mg/kg																		
Aroclor 1232 in mg/kg																		
Aroclor 1242 in mg/kg																		
Aroclor 1248 in mg/kg																		
Aroclor 1254 in mg/kg																		
Aroclor 1260 in mg/kg																		
Total PCBs in mg/kg	1	10																

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	SC-MW02 (2.5-4 ft) 7/15/04 Pre-RI	SC-MW02 (5-6.5 ft) 7/15/04 Pre-RI	SC-SB01 (0-4 ft) 7/15/04 Pre-RI	SC-SB01 (4-8 ft) 7/15/04 Pre-RI	SC-SB02 (0-4 ft) 7/15/04 Pre-RI	SC-SB02 (4-8 ft) 7/15/04 Pre-RI	SC-SB03 (0-4 ft) 7/15/04 Pre-RI	SC-SB03 (4-8 ft) 7/15/04 Pre-RI	SC-SB04 (0-4 ft) 7/15/04 Pre-RI	SC-SB04 (4-8 ft) 7/15/04 Pre-RI	SC-SB05 (0-4 ft) 7/15/04 Pre-RI	SC-SB05 (4-8 ft) 7/15/04 Pre-RI
Total Petroleum Hydrocarbons (TPH)														
Gasoline Range Hydrocarbons in mg/kg														
Diesel Range Hydrocarbons in mg/kg	2,000	2,000	51		16	18	5.0 U	5.0 U	18	54	70	5.0 U	63	5.0 U
Oil Range Hydrocarbons in mg/kg	2,000	2,000	160		240	75	10 U	10 U	120	270	390	10 U	460	10 U
Bunker C in mg/kg	2,000	2,000		16										
Total TPHs in mg/kg	2,000	2,000	211	16	256	93	ND	ND	138	324	460	ND	523	ND
Heavy Metals														
Arsenic in mg/kg	7	7	6 U	20 U	20 U	7 U	5 U	6 U	5 U	6 U	20 U	6 U	6 U	7 U
Cadmium in mg/kg	1	1	0.8 J	0.6 U	0.6 U	0.7	0.2 U	0.2 U	0.3	0.5	0.6 U	0.3 U	0.2 U	0.3 U
Chromium (Total) in mg/kg	260	260	115	220	75.8	1,050	24.2 J	52.1 J	22.8 J	31.9 J	63.9 J	37.2 J	43.6 J	28.0 J
Chromium (VI) in mg/kg	48	48	0.132 U		0.179	0.150 U	0.120 U	0.128 U	0.124 U	0.127 U	0.134 U	0.138 U	0.116 U	2.37
Copper in mg/kg	36	36	571 J	59.8	76.1 J	60.6 J	14.1	30.3	44.0	33.5	139	63.2	33.3	20.4
Lead in mg/kg	81	81	92	9	65	37	3	127	19	30	557	76	65	8
Mercury in mg/kg	0.1	0.1	0.12	0.07	0.13 J	0.09 J	0.05 U	0.05	0.34	0.10	0.54	0.08	0.07	0.06
Nickel in mg/kg	48	48	20	56	62	32	25	42	19	26	55	29	38	33
Zinc in mg/kg	85	85	34.4	92	60	55.4	27.8	97.9	76.0	94.0	373	67.0	73.7	50.3
Conventional Chemistry Parameters (including other metals)														
Formaldehyde in mg/kg	16,000	700,000												
Iron in mg/kg	56,000	2,500,000												
Manganese in mg/kg	11,000	490,000												
pH in pH units	2.5 - 11	2.5 - 11	7.79	8.30	8.54	8.01	10.25	7.87	7.80	11.28	8.10	7.59	6.18	7.66
Polycyclic Aromatic Hydrocarbons (PAHs)														
Acenaphthene in mg/kg	0.26	0.26								2.1				
Acenaphthylene in mg/kg										0.042				
Anthracene in mg/kg	3.5	3.5								1.8				
Benzo(g,h,i)perylene in mg/kg										0.034				
Dibenzofuran in mg/kg	80	3,500								1.5				
Fluoranthene in mg/kg	2.6	2.6								3.1				
Fluorene in mg/kg	0.37	0.37								2.3				
Phenanthrene in mg/kg										6.4				
Pyrene in mg/kg	16	16								1.7				
1-Methylnaphthalene in mg/kg	35	4,500								0.71				
2-Methylnaphthalene in mg/kg	320	14,000								1.4				
Naphthalene in mg/kg	1.6	1.6								1.5				
Total Naphthalenes in mg/kg										3.61				
Benz(a)anthracene in mg/kg	0.12	0.12								0.39				
Benzo(a)pyrene in mg/kg	0.14	0.31								0.13				
Benzo(b)fluoranthene in mg/kg	0.38	0.38								0.16				
Benzo(k)fluoranthene in mg/kg	0.38	0.38								0.14				
Chrysene in mg/kg	0.13	0.13								0.39				
Dibenzo(a,h)anthracene in mg/kg	0.14	0.58								0.024 U				
Indeno(1,2,3-cd)pyrene in mg/kg	1.1	1.1								0.024 U				
Total cPAHs TEQ in mg/kg	0.14	0.31								0.205				

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	SC-MW02 (2.5-4 ft) 7/15/04 Pre-RI	SC-MW02 (5-6.5 ft) 7/15/04 Pre-RI	SC-SB01 (0-4 ft) 7/15/04 Pre-RI	SC-SB01 (4-8 ft) 7/15/04 Pre-RI	SC-SB02 (0-4 ft) 7/15/04 Pre-RI	SC-SB02 (4-8 ft) 7/15/04 Pre-RI	SC-SB03 (0-4 ft) 7/15/04 Pre-RI	SC-SB03 (4-8 ft) 7/15/04 Pre-RI	SC-SB04 (0-4 ft) 7/15/04 Pre-RI	SC-SB04 (4-8 ft) 7/15/04 Pre-RI	SC-SB05 (0-4 ft) 7/15/04 Pre-RI	SC-SB05 (4-8 ft) 7/15/04 Pre-RI
Other Semivolatiles														
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013								0.081 U				
1,2-Dichlorobenzene in mg/kg	0.039	0.039								0.081 U				
1,3-Dichlorobenzene in mg/kg										0.081 U				
1,4-Dichlorobenzene in mg/kg	0.051	0.051								0.081 U				
2,4,5-Trichlorophenol in mg/kg	93	93								0.4 U				
2,4,6-Trichlorophenol in mg/kg	0.015	0.015								0.4 U				
2,4-Dichlorophenol in mg/kg	0.2	0.2								0.24 U				
2,4-Dimethylphenol in mg/kg	0.73	0.73								0.24 U				
2,4-Dinitrophenol in mg/kg	0.4	0.4								0.81 U				
2-Chloronaphthalene in mg/kg	6,400	280,000								0.081 U				
2-Chlorophenol in mg/kg	0.24	0.24								0.081 U				
2-Methylphenol in mg/kg	4,000	180,000								0.081 U				
2-Nitroaniline in mg/kg	800	35,000								0.4 U				
2-Nitrophenol in mg/kg										0.4 U				
3,3'-Dichlorobenzidine in mg/kg	0.1	0.1								0.4 U				
3-Nitroaniline in mg/kg										0.49 U				
4,6-Dinitro-2-methylphenol in mg/kg										0.81 U				
4-Bromophenyl phenyl ether in mg/kg										0.081 U				
4-Chloro-3-methylphenol in mg/kg										0.16 U				
4-Chloroaniline in mg/kg	5	660								0.24 U				
4-Chlorophenyl phenyl ether in mg/kg										0.081 U				
4-Methylphenol in mg/kg	400	18,000								0.081 U				
4-Nitroaniline in mg/kg										0.4 U				
4-Nitrophenol in mg/kg										0.4 U				
Benzoic acid in mg/kg	320,000	14,000,000								0.81 U				
Benzyl alcohol in mg/kg	8,000	350,000								0.4 U				
Benzyl butyl phthalate in mg/kg	0.079	0.079								0.081 U				
Bis(2-chloro-1-methylethyl) ether in mg/kg	14	1,900								0.081 U				
Bis(2-chloroethoxy)methane in mg/kg										0.081 U				
Bis(2-chloroethyl) ether in mg/kg	0.01	0.01								0.16 U				
Bis(2-ethylhexyl) phthalate in mg/kg	1.8	1.8								0.081 U				
Carbazole in mg/kg										0.27				
Diethyl phthalate in mg/kg	1.2	1.2								0.081 U				
Dimethyl phthalate in mg/kg										0.081 U				
Di-n-butyl phthalate in mg/kg	3.6	3.6								0.081 U				
Di-n-octyl phthalate in mg/kg	270	270								0.081 U				
Hexachlorobenzene in mg/kg	0.26	0.26								0.081 U				
Hexachlorobutadiene in mg/kg	0.17	0.17								0.16 U				
Hexachlorocyclopentadiene in mg/kg	480	3,500								0.4 U				
Hexachloroethane in mg/kg	0.096	0.096								0.16 U				
Isophorone in mg/kg	0.62	0.62								0.081 U				
Nitrobenzene in mg/kg	1.5	1.5								0.081 U				
N-Nitroso-di-n-propylamine in mg/kg	0.01	0.01								0.16 U				
N-Nitrosodiphenylamine in mg/kg	0.079	0.079								0.081 U				
Pentachlorophenol in mg/kg	0.1	0.1								0.4 U				
Phenol in mg/kg	160	160								0.16 U				
2,4-Dinitrotoluene in mg/kg	0.01	0.01								0.4 U				
2,6-Dinitrotoluene in mg/kg	80	3,500								0.4 U				

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	SC-MW02 (2.5-4 ft) 7/15/04 Pre-RI	SC-MW02 (5-6.5 ft) 7/15/04 Pre-RI	SC-SB01 (0-4 ft) 7/15/04 Pre-RI	SC-SB01 (4-8 ft) 7/15/04 Pre-RI	SC-SB02 (0-4 ft) 7/15/04 Pre-RI	SC-SB02 (4-8 ft) 7/15/04 Pre-RI	SC-SB03 (0-4 ft) 7/15/04 Pre-RI	SC-SB03 (4-8 ft) 7/15/04 Pre-RI	SC-SB04 (0-4 ft) 7/15/04 Pre-RI	SC-SB04 (4-8 ft) 7/15/04 Pre-RI	SC-SB05 (0-4 ft) 7/15/04 Pre-RI	SC-SB05 (4-8 ft) 7/15/04 Pre-RI
Volatile Organic Compounds (VOC)														
1,1,1,2-Tetrachloroethane in mg/kg	38	5,000	0.0012 U	0.0013 U										
1,1,1-Trichloroethane in mg/kg	28	63	0.0012 U	0.0013 U										
1,1,2 - Trichlorotrifluoroethane in mg/kg	2,400,000	110,000,000	0.0023 U	0.0026 U										
1,1,2,2-Tetrachloroethane in mg/kg	0.0062	0.0062	0.0012 U	0.0013 U										
1,1,2-Trichloroethane in mg/kg	0.012	0.024	0.0012 U	0.0013 U										
1,1-Dichloroethane in mg/kg	2.6	5.7	0.0012 U	0.0013 U										
1,1-Dichloroethene in mg/kg	0.005	0.005	0.0012 U	0.0013 U										
1,1-Dichloropropene in mg/kg			0.0012 U	0.0013 U										
1,2,3-Trichlorobenzene in mg/kg			0.0058 U	0.0064 U										
1,2,3-Trichloropropane in mg/kg	0.033	4.4	0.0023 U	0.0026 U										
1,2,4-Trichlorobenzene in mg/kg	0.013	0.013	0.0058 U	0.0064 U										
1,2,4-Trimethylbenzene in mg/kg			0.0012 U	0.0013 U										
1,2-Dibromo-3-chloropropane in mg/kg	1.3	160	0.0058 U	0.0064 U										
1,2-Dibromoethane (EDB) in mg/kg	0.02	0.02	0.0012 U	0.0013 U										
1,2-Dichlorobenzene in mg/kg	0.039	0.039	0.0012 U	0.0013 U										
1,2-Dichloroethane (EDC) in mg/kg	0.005	0.033	0.0012 U	0.0013 U										
1,2-Dichloropropane in mg/kg	0.016	0.016	0.0012 U	0.0013 U										
1,3,5-Trimethylbenzene in mg/kg	800	35,000	0.0012 U	0.0013 U										
1,3-Dichlorobenzene in mg/kg			0.0012 U	0.0013 U										
1,3-Dichloropropane in mg/kg			0.0012 U	0.0013 U										
1,4-Dichloro-2-Butene in mg/kg			0.0058 U	0.0064 U										
1,4-Dichlorobenzene in mg/kg	0.051	0.051	0.0012 U	0.0013 U										
2,2-Dichloropropane in mg/kg			0.0012 U	0.0013 U										
2-Butanone in mg/kg	48,000	2,100,000	0.0084	0.0064 U										
2-Chloroethyl Vinyl Ether in mg/kg			0.0058 U	0.0064 U										
2-Chlorotoluene in mg/kg	1,600	70,000	0.0012 U	0.0013 U										
2-Hexanone in mg/kg			0.0058 U	0.0064 U										
4-Chlorotoluene in mg/kg			0.0012 U	0.0013 U										
4-Methyl-2-pentanone in mg/kg	6,400	280,000	0.0058 U	0.0064 U										
Acetone in mg/kg	72,000	3,200,000	0.033	0.0078										
Acrolein in mg/kg	40	1,800	0.058 U	0.064 U										
Acrylonitrile in mg/kg	1.9	240	0.0058 U	0.0064 U										
Benzene in mg/kg	0.005	0.031	0.0072	0.0013 U										
Bromobenzene in mg/kg			0.0012 U	0.0013 U										
Bromochloromethane in mg/kg			0.0012 U	0.0013 U										
Bromodichloromethane in mg/kg	0.005	0.005	0.0012 U	0.0013 U										
Bromoethane in mg/kg			0.0023 U	0.0026 U										
Bromoform in mg/kg	0.33	0.33	0.0012 U	0.0013 U										
Bromomethane in mg/kg	0.0056	0.012	0.0012 U	0.0013 U										
Carbon disulfide in mg/kg	0.41	0.89	0.039	0.0013 U										
Carbon tetrachloride in mg/kg	0.005	0.005	0.0012 U	0.0013 U										
Chlorobenzene in mg/kg	0.38	0.84	0.0012 U	0.0013 U										
Chloroethane in mg/kg			0.0012 U	0.0013 U										
Chloroform in mg/kg	0.005	0.014	0.0012 U	0.0013 U										
Chloromethane in mg/kg	0.005	0.02	0.0012 U	0.0013 U										
cis-1,2-Dichloroethene (DCE) in mg/kg	0.14	0.3	0.0012 U	0.0013 U										
cis-1,3-Dichloropropene in mg/kg			0.0012 U	0.0013 U										
Dibromochloromethane in mg/kg	0.005	0.005	0.0012 U	0.0013 U										
Dibromomethane in mg/kg	800	35,000	0.0012 U	0.0013 U										
Ethylbenzene in mg/kg	7.3	7.3	0.0012	0.0013 U										
Hexachlorobutadiene in mg/kg	0.17	0.17	0.0058 U	0.0064 U										
Isopropylbenzene in mg/kg	8,000	350,000	0.0012 U	0.0013 U										
Methylene chloride in mg/kg	0.042	0.26	0.007	0.0081										

Table 7-10A - Soil Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Saturated Soil - Unrestricted Land Use Screening Level	Saturated Soil - Industrial Land Use Screening Level	SC-MW02 (2.5-4 ft) 7/15/04 Pre-RI	SC-MW02 (5-6.5 ft) 7/15/04 Pre-RI	SC-SB01 (0-4 ft) 7/15/04 Pre-RI	SC-SB01 (4-8 ft) 7/15/04 Pre-RI	SC-SB02 (0-4 ft) 7/15/04 Pre-RI	SC-SB02 (4-8 ft) 7/15/04 Pre-RI	SC-SB03 (0-4 ft) 7/15/04 Pre-RI	SC-SB03 (4-8 ft) 7/15/04 Pre-RI	SC-SB04 (0-4 ft) 7/15/04 Pre-RI	SC-SB04 (4-8 ft) 7/15/04 Pre-RI	SC-SB05 (0-4 ft) 7/15/04 Pre-RI	SC-SB05 (4-8 ft) 7/15/04 Pre-RI
Methyliodide in mg/kg			0.0012 U	0.0013 U										
n-Butylbenzene in mg/kg			0.0012 U	0.0013 U										
n-Propylbenzene in mg/kg	8,000	350,000	0.0012 U	0.0013 U										
p-Isopropyltoluene in mg/kg			0.18	0.0013 U										
sec-Butylbenzene in mg/kg			0.0012 U	0.0013 U										
Styrene in mg/kg	1.2	12	0.0012 U	0.0013 U										
tert-Butylbenzene in mg/kg			0.0012 U	0.0013 U										
Tetrachloroethene (PCE) in mg/kg	0.015	0.015	0.0012 U	0.0013 U										
Toluene in mg/kg	18	18	0.0017	0.0013 U										
trans-1,2-Dichloroethene in mg/kg	0.12	0.26	0.0012 U	0.0013 U										
trans-1,3-Dichloropropene in mg/kg			0.0012 U	0.0013 U										
Trichloroethene (TCE) in mg/kg	0.005	0.015	0.0012 U	0.0013 U										
Trichlorofluoromethane in mg/kg	24,000	1,100,000	0.0012 U	0.0013 U										
Vinyl acetate in mg/kg	2.9	6.3	0.0058 U	0.0064 U										
Vinyl chloride in mg/kg	0.005	0.005	0.0012 U	0.0013 U										
o-Xylene in mg/kg	1.8	4	0.0093	0.0013 U										
Xylenes (total) in mg/kg	16,000	700,000	0.014	0.0013 U										
Naphthalene in mg/kg	1.6	1.6	0.0058 U	0.0064 U										
Polychlorinated Biphenyls (PCBs)														
Aroclor 1016 in mg/kg														
Aroclor 1221 in mg/kg														
Aroclor 1232 in mg/kg														
Aroclor 1242 in mg/kg														
Aroclor 1248 in mg/kg														
Aroclor 1254 in mg/kg														
Aroclor 1260 in mg/kg														
Total PCBs in mg/kg	1	10												

Table 7-10B - Groundwater Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AP-MW01 07/25/04 Pre-RI	CW-MW01 07/26/04 Pre-RI	EMW-11S 07/09/93 Pre-RI	EMW-11S 12/16/93 Pre-RI	EMW-11S 07/27/04 Pre-RI	EMW-17S 12/15/93 Pre-RI	LP-MW02 07/26/04 Pre-RI	LW-SB04 07/22/04 Pre-RI	SC-MW01 07/25/04 Pre-RI	SC-MW02 07/27/04 Pre-RI	SC-MW02 07/27/04 Field Dup Pre-RI	SC-MW02 09/30/09 RI	SC-MW02 04/01/10 RI
Total Petroleum Hydrocarbons (TPH)															
Gasoline Range Hydrocarbons in ug/L			250 U	250 U			250 U		250 U		250 U	330 J	370 J		
Diesel Range Hydrocarbons in ug/L			400	250 U			250 U		250 U		250 U	600 J	250 U		
Oil Range Hydrocarbons in ug/L			500 U	500 U			500 U		500 U		500 U	500 UJ	500 U		
Total TPHs in ug/L			650	ND			ND		ND		ND	850 J	ND		
Dissolved Metals															
Dissolved Arsenic in ug/L	5	5	1.1	0.5 U			2.7		0.5	3.1	0.6	12.2	13.4	2.94	1.67 U
Dissolved Cadmium in ug/L	8.8	8.8	0.2 U	0.5 U			0.5 U		0.5 U	0.2 U	0.2 U	0.5 U	0.5 U	0.043	0.067 U
Dissolved Chromium (III) in ug/L			30.0	1.00			21.0		11.0	54.0	0.6	29,200	29,500		
Dissolved Chromium (Total) in ug/L	260	260	30	1			21		11	54	0.6	29,200	29,500	6,410	235
Dissolved Chromium (VI) in ug/L	50	50	11 U	11 U			11 U		11 U		11 U	224 U	224 U	50 U	50 U
Dissolved Copper in ug/L	3.1	3.1	1.1	1 U			2		1 U	6.1	1	17	17	4.78	0.412
Dissolved Lead in ug/L	8.1	8.1	1 U	2 U			2 U		2 U	2	1 U	2 U	2 U	0.202	0.042 U
Dissolved Mercury in ug/L	0.059	0.059	0.1 U	0.1 U	0.2 U	0.2 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	1 U	1 U	0.00242 J	0.0058
Dissolved Nickel in ug/L	8.2	8.2	3.6	2			3		2	5.1	0.5 U	29	29	8.42	1.67 U
Dissolved Zinc in ug/L	81	81	4 U	10 U			10 U		10 U	25	4 U	20	20	4.13	0.37 U
Polycyclic Aromatic Hydrocarbons (PAHs)															
Acenaphthene in ug/L	3.3	3.3	0.10 U	0.10 U			3.4		0.10 U		0.10 U	0.66	0.68		
Acenaphthylene in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Anthracene in ug/L	9.6	9.6	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.23	0.26		
Benzo(g,h,i)perylene in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Fluoranthene in ug/L	3.3	3.3	0.10 U	0.10 U			0.33		0.10 U		0.10 U	0.94 J	0.97 J		
Fluorene in ug/L	3	3	0.10 U	0.10			1.3		0.10 U		0.10 U	0.70	0.38		
Phenanthrene in ug/L			0.10 U	0.10 U			0.57		0.10 U		0.10 U	0.93	1.2		
Pyrene in ug/L	15	15	0.10 U	0.10 U			0.30		0.10 U		0.10 U	0.84	0.84		
1-Methylnaphthalene in ug/L			0.10 U	0.10 U			4.0		0.10 U		0.10 U	0.25	0.28		
2-Methylnaphthalene in ug/L			0.10 U	0.10 U			3.9		0.10 U		0.10 U	0.15 J	0.09 J		
Naphthalene in ug/L	83	83	0.10 U	0.10 U			18		0.10 U		0.10 U	2.9	2.6		
Total Naphthalenes in ug/L			ND	ND			25.9		ND		ND	3.3	2.97		
Benz(a)anthracene in ug/L	0.02	0.02	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Benzo(a)pyrene in ug/L	0.02	0.02	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Benzo(b)fluoranthene in ug/L	0.02	0.02	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Benzo(k)fluoranthene in ug/L	0.02	0.02	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Chrysene in ug/L	0.02	0.02	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10		
Dibenzo(a,h)anthracene in ug/L	0.02	0.02	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Indeno(1,2,3-cd)pyrene in ug/L	0.02	0.02	0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 U	0.10 U		
Total cPAHs TEQ in ug/L	0.02	0.02	ND	ND			ND		ND		ND	ND	0.076		

Table 7-10B - Groundwater Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AP-MW01 07/25/04 Pre-RI	CW-MW01 07/26/04 Pre-RI	EMW-11S 07/09/93 Pre-RI	EMW-11S 12/16/93 Pre-RI	EMW-11S 07/27/04 Pre-RI	EMW-17S 12/15/93 Pre-RI	LP-MW02 07/26/04 Pre-RI	LW-SB04 07/22/04 Pre-RI	SC-MW01 07/25/04 Pre-RI	SC-MW02 07/27/04 Pre-RI	SC-MW02 07/27/04 Field Dup Pre-RI	SC-MW02 09/30/09 RI	SC-MW02 04/01/10 RI
Other Semivolatiles															
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
1,2-Dichlorobenzene in ug/L	6.1	6.1	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
1,3-Dichlorobenzene in ug/L	960	960	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
1,4-Dichlorobenzene in ug/L	5	5	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
2,4,5-Trichlorophenol in ug/L	3,600	3,600	5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
2,4,6-Trichlorophenol in ug/L	2.4	2.4	5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
2,4-Dichlorophenol in ug/L	73	73	3.0 U	3.0 U			3.0 U		3.0 U		3.0 U	3.0 U	3.0 U		
2,4-Dimethylphenol in ug/L	200	200	3.0 U	3.0 U			3.0 U		3.0 U		3.0 U	16	17		
2,4-Dinitrophenol in ug/L	1,400	1,400	25 U	25 U			25 U		25 U		25 U	25 U	25 U		
2-Chloronaphthalene in ug/L	390	390	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
2-Chlorophenol in ug/L	37	37	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
2-Methylphenol in ug/L			1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	8.1	7.4		
2-Nitroaniline in ug/L			5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
2-Nitrophenol in ug/L			5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
3,3'-Dichlorobenzidine in ug/L	2	2	5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
3-Nitroaniline in ug/L			6.0 U	6.0 U			6.0 U		6.0 U		6.0 U	6.0 U	6.0 U		
4,6-Dinitro-2-methylphenol in ug/L			15 U	15 U			15 U		15 U		15 U	15 U	15 U		
4-Bromophenyl phenyl ether in ug/L			1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
4-Chloro-3-methylphenol in ug/L			2.0 U	2.0 U			2.0 U		2.0 U		2.0 U	2.0 U	2.0 U		
4-Chloroaniline in ug/L			3.0 U	3.0 U			3.0 U		3.0 U		3.0 U	3.0 U	3.0 U		
4-Chlorophenyl phenyl ether in ug/L			1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
4-Methylphenol in ug/L			1.0 U	13			1.0 U		1.0 U		1.0 U	320	310 J		
4-Nitroaniline in ug/L			5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
4-Nitrophenol in ug/L			5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
Benzoic acid in ug/L			10 U	12 J			10 U		10 U		10 U	150	150 J		
Benzyl alcohol in ug/L			5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
Benzyl butyl phthalate in ug/L	0.35	0.35	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Bis(2-chloro-1-methylethyl) ether in ug/L	14	14	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Bis(2-chloroethoxy)methane in ug/L			1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Bis(2-chloroethyl) ether in ug/L	0.53	0.53	2.0 U	2.0 U			2.0 U		2.0 U		2.0 U	2.0 U	2.0 U		
Bis(2-ethylhexyl) phthalate in ug/L	1	1	1.0 U	1.1 U			1.0 U		1.8 U		1.0 U	1.0 U	1.0 U		
Carbazole in ug/L			1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Dibenzofuran in ug/L			1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Diethyl phthalate in ug/L	740	740	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Dimethyl phthalate in ug/L	1,100,000	1,100,000	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Di-n-butyl phthalate in ug/L	140	140	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Di-n-octyl phthalate in ug/L	0.2	0.2	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Hexachlorobenzene in ug/L	0.2	0.2	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Hexachlorobutadiene in ug/L	0.2	0.2	2.0 U	2.0 U			2.0 U		2.0 U		2.0 U	2.0 U	2.0 U		
Hexachlorocyclopentadiene in ug/L	1,100	1,100	5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
Hexachloroethane in ug/L	3.3	3.3	2.0 U	2.0 U			2.0 U		2.0 U		2.0 U	2.0 U	2.0 U		
Isophorone in ug/L	600	600	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Nitrobenzene in ug/L	690	690	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
N-Nitroso-di-n-propylamine in ug/L	0.32	0.32	2.0 U	2.0 U			2.0 U		2.0 U		2.0 U	2.0 U	2.0 U		
N-Nitrosodiphenylamine in ug/L	3.7	3.7	1.0 U	1.0 U			1.0 U		1.0 U		1.0 U	1.0 U	1.0 U		
Pentachlorophenol in ug/L	3	3	5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
Phenol in ug/L	216,000	216,000	2.0 U	2.0 U			2.0 U		2.0 U		2.0 U	34	32		
2,4-Dinitrotoluene in ug/L	3.4	3.4	5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		
2,6-Dinitrotoluene in ug/L			5.0 U	5.0 U			5.0 U		5.0 U		5.0 U	5.0 U	5.0 U		

Table 7-10B - Groundwater Chemistry Data for Locations Not Accounted for in Other Subareas

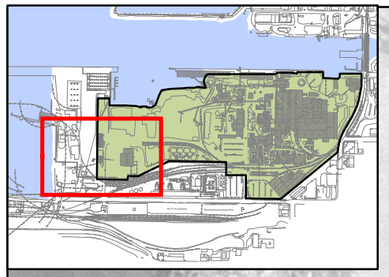
GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AP-MW01 07/25/04 Pre-RI	CW-MW01 07/26/04 Pre-RI	EMW-11S 07/09/93 Pre-RI	EMW-11S 12/16/93 Pre-RI	EMW-11S 07/27/04 Pre-RI	EMW-17S 12/15/93 Pre-RI	LP-MW02 07/26/04 Pre-RI	LW-SB04 07/22/04 Pre-RI	SC-MW01 07/25/04 Pre-RI	SC-MW02 07/27/04 Pre-RI	SC-MW02 07/27/04 Field Dup Pre-RI	SC-MW02 09/30/09 RI	SC-MW02 04/01/10 RI
Volatile Organic Compounds (VOC)															
1,1,1,2-Tetrachloroethane in ug/L	7.4	74	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,1,1-Trichloroethane in ug/L	11,000	25,000	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,1,2 - Trichlorotrifluoroethane in ug/L	1,100	2,400	2.0 U	2.0 U			10 U		2.0 U		2.0 U	20 UJ	20 UJ		
1,1,2,2-Tetrachloroethane in ug/L	4	4	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,1,2-Trichloroethane in ug/L	7.9	16	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,1-Dichloroethane in ug/L	2,300	5,000	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,1-Dichloroethene in ug/L	3.2	3.2	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,1-Dichloropropene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,2,3-Trichlorobenzene in ug/L			5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
1,2,3-Trichloropropane in ug/L			3.0 U	3.0 U			15 U		3.0 U		3.0 U	30 UJ	30 UJ		
1,2,4-Trichlorobenzene in ug/L	0.48	0.48	5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
1,2,4-Trimethylbenzene in ug/L	24	52	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,2-Dibromo-3-chloropropane in ug/L			5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
1,2-Dibromoethane (EDB) in ug/L	2	7.4	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,2-Dichlorobenzene in ug/L	6.1	6.1	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,2-Dichloroethane (EDC) in ug/L	4.2	37	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,2-Dichloropropane in ug/L	15	15	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,3,5-Trimethylbenzene in ug/L	25	54	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,3-Dichlorobenzene in ug/L	960	960	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,3-Dichloropropane in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
1,4-Dichloro-2-Butene in ug/L			5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
1,4-Dichlorobenzene in ug/L	5	5	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
2,2-Dichloropropane in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
2-Butanone in ug/L	350,000	760,000	5.0 U	5.0 U			25 U		5.0 U		5.0 U	100 J	100 J		
2-Chloroethyl Vinyl Ether in ug/L			5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
2-Chlorotoluene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
2-Hexanone in ug/L			5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
4-Chlorotoluene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
4-Methyl-2-pentanone in ug/L	11,000	24,000	5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
Acetone in ug/L			5.0 U	5.0 U			25 U		5.0 U		5.0 U	240 J	250 J		
Acrolein in ug/L	20	20	50 U	50 U			250 U		50 U		50 U	500 UJ	500 UJ		
Acrylonitrile in ug/L	5	5	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Benzene in ug/L	2.4	24	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Bromobenzene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Bromochloromethane in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Bromodichloromethane in ug/L	0.5	0.9	1.0 U	1.0 U			5.0 U		1.0 U		1.5	10 UJ	10 UJ		
Bromoethane in ug/L			2.0 U	2.0 U			10 U		2.0 U		2.0 U	20 UJ	20 UJ		
Bromoform in ug/L	140	140	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Bromomethane in ug/L	13	28	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Carbon disulfide in ug/L	400	870	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	25 J	27 J		
Carbon tetrachloride in ug/L	0.5	1.6	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Chlorobenzene in ug/L	100	220	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Chloroethane in ug/L	12	120	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Chloroform in ug/L	1.2	12	1.0 U	1.0 U			5.0 U		1.0 U		14	10 UJ	10 UJ		
Chloromethane in ug/L	5.2	52	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
cis-1,2-Dichloroethene (DCE) in ug/L	160	350	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
cis-1,3-Dichloropropene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Dibromochloromethane in ug/L	0.5	2.2	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Dibromomethane in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Ethylbenzene in ug/L	2,100	2,100	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Hexachlorobutadiene in ug/L	0.2	0.2	5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
Isopropylbenzene in ug/L	720	1,600	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Methylene chloride in ug/L	94	590	2.0 U	2.0 U			10 U		2.0 U		2.0 U	20 UJ	20 UJ		
Methyliodide in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		

Table 7-10B - Groundwater Chemistry Data for Locations Not Accounted for in Other Subareas

GP West RI/FS 070188

Chemical Name	Groundwater Screening Level for Unrestricted Land Use	Groundwater Screening Level for Industrial Land Use	AP-MW01 07/25/04 Pre-RI	CW-MW01 07/26/04 Pre-RI	EMW-11S 07/09/93 Pre-RI	EMW-11S 12/16/93 Pre-RI	EMW-11S 07/27/04 Pre-RI	EMW-17S 12/15/93 Pre-RI	LP-MW02 07/26/04 Pre-RI	LW-SB04 07/22/04 Pre-RI	SC-MW01 07/25/04 Pre-RI	SC-MW02 07/27/04 Pre-RI	SC-MW02 07/27/04 Field Dup Pre-RI	SC-MW02 09/30/09 RI	SC-MW02 04/01/10 RI
n-Butylbenzene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
n-Propylbenzene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
p-Isopropyltoluene in ug/L			1.0 U	25			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
sec-Butylbenzene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Styrene in ug/L	78	780	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
tert-Butylbenzene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Tetrachloroethene (PCE) in ug/L	3.3	3.3	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Toluene in ug/L	7,300	7,300	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
trans-1,2-Dichloroethene in ug/L	130	290	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
trans-1,3-Dichloropropene in ug/L			1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Trichloroethene (TCE) in ug/L	1.6	8.4	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Trichlorofluoromethane in ug/L	120	260	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Vinyl acetate in ug/L	7,800	17,000	5.0 U	5.0 U			25 U		5.0 U		5.0 U	50 UJ	50 UJ		
Vinyl chloride in ug/L	0.5	2.4	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
o-Xylene in ug/L	440	960	1.0 U	1.0 U			5.0 U		1.0 U		1.0 U	10 UJ	10 UJ		
Xylenes (total) in ug/L			1.00 U	1.00 U			5.00 U		1.00 U		1.00 U	10 UJ	10 UJ		
Naphthalene in ug/L	83	83	5.0 U	5.0 U			26		5.0 U		5.0 U	50 UJ	50 UJ		
Polychlorinated Biphenyls (PCBs)															
Aroclor 1016 in ug/L in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 UJ	0.10 U		
Aroclor 1221 in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 UJ	0.40		
Aroclor 1232 in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 UJ	0.10 U		
Aroclor 1242 in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 UJ	0.10 U		
Aroclor 1248 in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 UJ	0.10 U		
Aroclor 1254 in ug/L in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 UJ	0.10 U		
Aroclor 1260 in ug/L in ug/L			0.10 U	0.10 U			0.10 U		0.10 U		0.10 U	0.10 UJ	0.10 U		
Total PCBs in ug/L in ug/L	0.1	0.1	0.35 U	0.35 U			0.35 U		0.35 U		0.35 U	0.35 UJ	0.5 U		
Conventional Chemistry Parameters (including other metals)															
Alkalinity (Total) in mg/L as CaCO3						554		758							
Chloride in mg/L						30		135							
Dissolved Calcium in mg/L						240		130							
Dissolved Iron in mg/L			6.17	2			3.63		0.1	4.42	0.05	26	22		
Dissolved Magnesium in mg/L						36		20							
Dissolved Manganese in mg/L	0.1	0.1	0.292	1.11		4.1	2.54	0.25	0.382	1.91	0.0013	12.8	11.1		
Dissolved Potassium in mg/L						35		21							
Dissolved Sodium in mg/L						72		250							
Formaldehyde in ug/L	1,600	1,600	18 U	17 U			18 U		9 U		6 U	6 U	7 U		
Nitrate + Nitrite in mg/L			0.500 U	0.010 U			0.500 U		0.010 U		0.208	0.500 U	0.500 U		
Nitrate as Nitrogen in mg/L			0.500 U	0.010 U			0.500 U		0.010 U		0.208	0.500 U	0.500 U		
Nitrite as Nitrogen in mg/L			0.500 U	0.010 U			0.500 U		0.010 U		0.010 U	0.500 U	0.500 U		
Sulfate in mg/L			79.6	11.6		351	56.5	100 U	77.3		4.8	3,560	3,510		
Sulfide in mg/L						0.5 U		0.5 U							
Total Organic Carbon in ug/L						191,000		9,000							
Total Suspended Solids in mg/L			2.3 U	8.4			2.6		6.6		1 U	86.7	220		
Field Parameters															
Conductivity in us/cm			1,441	648	1,340	1,590	841	1,640	533		90	6,685		4,137	2,920
Dissolved Oxygen in mg/L			1.3	1.17	4.7	8.9	0.67	1.95	1.62		8.74	0.68		0.65	4.58
Eh (ORP) in mVolts			-168.3	-178.4	26		-168.8	482	-186.5		22.8	-385.2		-496.6	-272
pH in pH units	6.2 - 8.5	6.2 - 8.5	6.94	6.45	7.59		6.75		7.62		8.85	6.05		6.41	6.56
Practical Salinity (Calculated) in PSU			0.7	0.3	0.7	0.8	0.4	0.8	0.3		0.0	3.6		2.2	1.5
Salinity in g/L					0.2										
Temperature in deg C			16.43	13.96	15.1		22.83		19.15		18.65	15.28		16.58	10.89
Turbidity in NTU			3.30	10.7			6.77		17.8		1.25	55.8		10	15



SALT STORAGE PAD

WASTEWATER SETTLING BASIN

SEE FIGURE 8-2B - WASTEWATER SETTLING BASIN AND LAW-1 AREAS

PORT MAINTENANCE BUILDING

COLLECTION TANK

SURGE STORAGE TANK

BRINE SLUDGE PIT

CLARIFIER

CHLORINE PLANT

50% CAUSTIC

50% CAUSTIC

CHLORATE

MOTOR CONTROL BUILDING

ELECTRIC SUBSTATION

SHOP

CELL BUILDING

CHLORINE STORAGE TANKS

RAIL LOADING AREA FOR CAUSTIC

SEE FIGURE 7-1B - MERCURY SOURCE AREA DETAIL

SEE FIGURE 7-1B - MERCURY SOURCE AREA DETAIL

SEE FIGURE 7-3A - STORMWATER SWALE SUBAREA

CP-MW02
(1.5 - 2.5) 0.038
(10 - 12) 0.064

CP-MWC2
(2 - 3) 0.021
(13 - 15) 0.037

ATW-C1
(8.5 - 10) 0.06

CP-MWC1
(2 - 3) 0.026
(12 - 13) 0.088

ATW-BC1
(9 - 10.5) 0.04

CP-MWB3
(13 - 15) 0.026

CP-MWB2
(3 - 4) 0.175
(10 - 12) 0.016J

ATW-C2
(8.5 - 10) 0.02U

CP-MWB1
(2 - 3) 0.03
(12.5 - 13.5) 0.082

ATW-AB3
(7 - 8) 0.02U

CP-MWA3
(11 - 13) 0.02

ATW-B3
(8.5 - 10) 0.02U

CP-MWA2
(2 - 3) 0.024
(11 - 12) 0.018J

CP-MWA1
(2 - 3) 0.022
(14 - 15) 0.125

ATW-AB4
(10.5 - 12) 0.07

ATW-B4
(8.5 - 10) 0.09

CP-MW01
(2 - 3) 0.022
(14 - 15) 0.044

AS-05
(0 - 2.5) 0.099
(2.5 - 5) 2.134
(5 - 7.5) 0.522
(7.5 - 10) 2.251

ESB-20S
(2 - 3.5) 2500
(5 - 6.5) 5800
(14 - 15.5) 260
(20 - 21.5) 31

STB-03
(3.5 - 5) 0.2
(7.5 - 9) 4.4
(11.5 - 13) 39

AS-12
(1 - 5) 10.2

EMW-28D
(8 - 9.5) 2.3
(18 - 19.5) 0.13U
(18 - 19.5) 0.0417
(28 - 29.5) 0.0407
(28 - 29.5) 0.12U
(44 - 45.5) 0.1U

STB-20
(0 - 1.5) 0.1U
(3.5 - 5) 0.2
(7.5 - 9) 0.1U

AS-16
(0 - 2.5) 0.791
(2.5 - 5) 0.7
(5 - 7.5) 0.098
(7.5 - 10) 0.066

CB-EW
(0 - 1) 65

STB-07
(0 - 1.5) 0.1U
(3.5 - 5) 0.1U
(5 - 6.5) 0.4

STB-19
(0 - 1.5) 0.1U
(3.5 - 5) 0.1U
(7.5 - 9) 0.5

CB-SW
(0 - 1) 34

EHA-2
(0 - 0.5) 12

FM1
(0 - 1) 17

EMW-4S
(5 - 6.5) 0.15
(10 - 11.5) 3.6
(15 - 16.5) 0.34U

FM2
(0 - 1) 12

STB-17
(0.5 - 2) 0.1U
(3.5 - 5) 0.7
(7.5 - 9) 37

EHA-5
(0 - 0.5) 6.1

EHA-3
(0 - 0.5) 2.5

HA-1
(0 - 0.5) 29
(1.5 - 2) 0.74

EHA-4
(0 - 0.5) 12

HA-11
(3 - 3.5) 0.61

HA-13
(0 - 0.5) 0.68
(1.5 - 2) 0.12
(2.83 - 3) 0.1U

CB-SW-04
(0 - 1) 16

STB-18
(0 - 1.5) 85
(3.5 - 5) 0.7
(7.5 - 9) 0.1

HA-14
(0 - 0.5) 6
(1.5 - 2) 2.4
(3 - 3.5) 0.36

HA-7
(0 - 0.5) 39
(1.5 - 1.67) 17

HA-15
(0 - 0.5) 15
(1.5 - 2) 0.1U
(3 - 3.5) 0.1U

BK-03
(0 - 0.5) 4.5

HA-8
(0 - 0.5) 13
(1.5 - 2) 0.14

STB-25
(0 - 1.5) 0.1U
(3.5 - 5) 0.1U
(7.5 - 9) 1.3

STB-05
(0 - 1.5) 0.3
(3.5 - 5) 0.4
(7.5 - 9) 0.2

STB-23
(0 - 1.5) 0.5
(3.5 - 5) 0.1U
(7.5 - 9) 0.1

EMW-1S
(5 - 6.5) 0.14U
(10 - 11.5) 0.12U
(12 - 13.5) 0.51

PL
(0 - 1) 1U

0 40 80 160 240 320 Feet

Soil Sample Location:

- Max Hg ≤ 0.1 mg/kg
- 0.1 < Max Hg ≤ 24 mg/kg
- Max Hg > 24 mg/kg

Sample Location ID
(Depth Interval in ft) Hg in mg/kg

BOLD BLUE TEXT = concentration > 0.1 mg/kg
BOLD BROWN TEXT = concentration > 24 mg/kg

RI sample locations are circled in black

Previous Cleanup Areas

Soil Mercury > 1050 mg/kg

Soil Mercury > 24 mg/kg

Area of Visible Elemental Mercury

Data Qualifiers:
U = Not Detected
J = Estimated Concentration

Note: *Data represent current (post-excavation) conditions based on available information.*

MILL NORTH
TRUE NORTH
45°

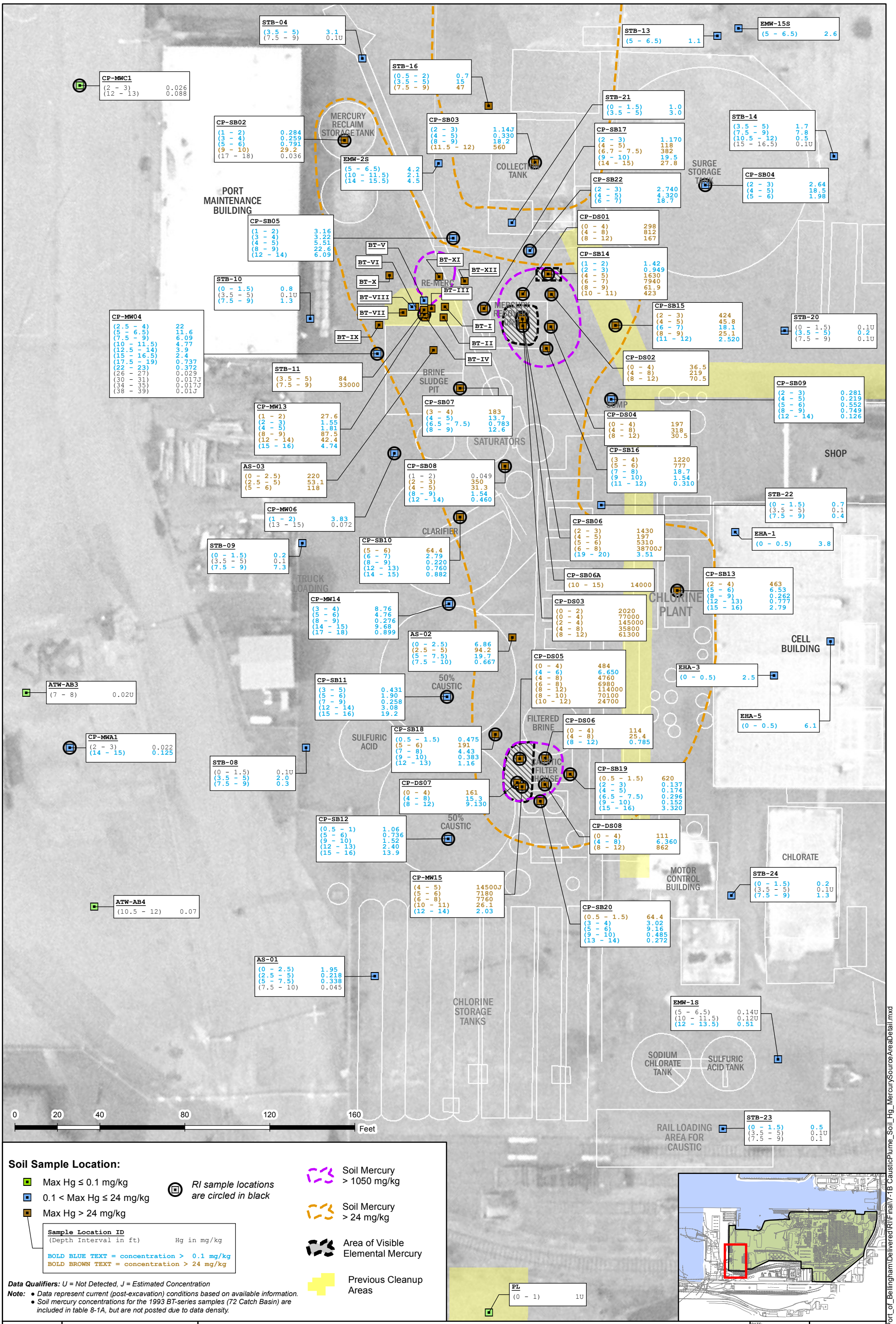
Aspect CONSULTING

Mercury Concentrations in Soil, Caustic Plume Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-1A
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-1A CausticPlume_Soil_Hg.mxd



Soil Sample Location:

- Max Hg ≤ 0.1 mg/kg
- 0.1 < Max Hg ≤ 24 mg/kg
- Max Hg > 24 mg/kg

RI sample locations are circled in black

Sample Location ID
(Depth Interval in ft) Hg in mg/kg

BOLD BLUE TEXT = concentration > 0.1 mg/kg
BOLD BROWN TEXT = concentration > 24 mg/kg

- Soil Mercury > 1050 mg/kg
- Soil Mercury > 24 mg/kg
- Area of Visible Elemental Mercury
- Previous Cleanup Areas

Data Qualifiers: *U = Not Detected, J = Estimated Concentration*

Note: *• Data represent current (post-excavation) conditions based on available information.*
• Soil mercury concentrations for the 1993 BT-series samples (72 Catch Basin) are included in table 8-1A, but are not posted due to data density.

MILL NORTH / TRUE NORTH (45°)

Aspect CONSULTING

Mercury Concentrations in Soil, Caustic Plume Subarea (Mercury Source Area Detail)

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-1B
REVISED BY: PPW/EAH	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-1B CausticPlume_Soil_Hg_MercurySourceAreaDetail.mxd

CP1 — Northwest

CP1' — Southeast

Bellingham Bay

CP-MWB3 (81 Ft SE) | CP-MWB2 (37 Ft Southeast) | CP-MWB1 (14 Ft Northwest) | CP-MWA1 (80 Ft Southeast) | AMW-2 (14 Ft Northwest) | CP-MW04 (155 Ft Northwest) | EMW-19S (14 Ft Southeast) | CP-MW-15 (30 Ft NW) | EMW-01S (2 Ft Southeast)

Former Caustic Tanks

Mean Higher High Water

Mean Lower Low Water

Elevation in Feet (MLLW)

16 | 8 | 0 | -8 | -16 | -24 | -32

0 | 80 | 160 | 240 | 320 | 400 | 480 | 560 | 640 | 720 | 800 | 880 | 960

Distance in Feet

CP2-CP2'

LEGEND

- Fill Unit-Gravel
- Fill Unit-Sand
- Tidal Flat Aquitard Unit
- Lower Sand Unit
- Water Table (September 2009)
- 8.5 Soil pH
- 0.026 Total Soil Mercury in mg/kg
- 0.124 Dissolved Mercury in µg/L (10/09)
- 6.9 Groundwater pH (10/09)
- (50 Ft South) Distance and Direction of Offset from Section Line
- Screened Interval
- Total Depth

Horizontal Scale: 1" = 80'
Vertical Scale: 1" = 8'
(10x Exaggeration)

0 | 80 | 160 Feet

Cross Section CP1-CP1'
Caustic Plume Subarea

GP West Site RI/FS
Bellingham, Washington

Aspect Consulting

APR-2013	BY: MAV/SCC	FIGURE NO. 7-1C
PROJECT NO. 070188	REV BY: SCC	

CP2
North

CP2'
South

Former Wastewater Settling Basin

Former Caustic Tanks

Log Pond

LAW-1 *(69 Ft West)* | **ESB-16s** *(25 Ft West)* | **CP-MW05** | **CP-MW03** *(31 Ft West)* | **STB-15** *(13 Ft East)* | **ESB-15s** *(19 Ft West)* | **EMW-14s** | **STB-16** *(8 Ft East)* | **EMW-02s** *(6 Ft West)* | **STB-21** *(31 Ft East)* | **CP-MW04** *(19 Ft West)* | **CP-MW06** | **EMW-19s** *(13 Ft West)* | **AMW-03**

Mean Higher High Water

Dike (Inferred)

Mean Lower Low Water

Elevation in Feet (MLLW)

16 | 8 | 0 | -8 | -16 | -24 | -32

0 | 80 | 160 | 240 | 320 | 400 | 480 | 560 | 640 | 720 | 800 | 880

Distance in Feet

CP1-CP1'

LEGEND

- Fill Unit-Silty Gravel
- Fill Unit-Gravel
- Fill Unit-Sand
- Tidal Flat Aquitard Unit
- Lower Sand Unit
- Water Table (September 2009)
- 8.5 Soil pH
- 0.026 Soil Mercury in mg/kg
- 0.124 Dissolved Mercury in µg/L (10/09)
- 6.9 Groundwater pH (10/09)

(50 Ft South)

Distance and Direction of Offset from Section Line

Screened Interval

Total Depth

Horizontal Scale: 1" = 80'
Vertical Scale: 1" = 8'
(10x Exaggeration)

0 | 80 | 160
Feet

Cross Section CP2-CP2'
Caustic Plume Subarea
GP West Site RI/FS
Bellingham, Washington

Aspect Consulting

APR-2013	BY: MAV/SCC	FIGURE NO. 7-1D
PROJECT NO. 070188	REV BY: SCC	

CAD Path: Q:\Port of Bellingham\070188 Former GP Mill Property\2013-03 Draft Final RI\070188-CP2.dwg Section CP2-CP2' 11x17 || Coordinate System: NAD 1983 State Plane Washington North FIPS 4601 Feet || Date Saved: Apr 12, 2013 4:23pm || User: scudd

Sample Location (symbol):

- Lower Sand Monitoring Well
- Fill Unit Monitoring Well
- Intertidal Well Point

Mercury in Groundwater (symbol color):

- Dissolved Mercury <= 0.059 ug/L
- Dissolved Mercury > 0.059 ug/L

RI sample locations are circled in black

Well ID → **CP-MW03**
Dissolved Mercury (in µg/L) → **M:** 0.763 ● 0.391 ● 0.48
pH → **P:** 7.2 ● 7.3 ● 7.0
ORP (mV) → **O:** -292 ● -142 ● -74
2009 / Mar-Apr 2010 / Dec 2010

Fill Unit Groundwater pH:

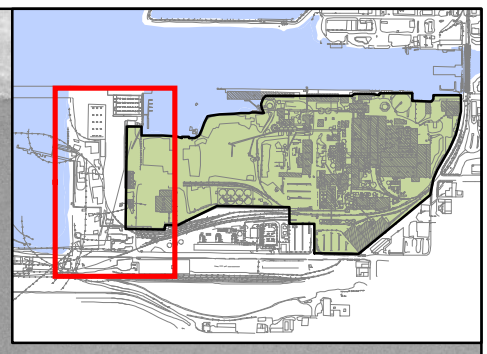
- > 8.5
- > 10

Fill Unit Dissolved Mercury in Groundwater:

- > 0.059 µg/L
- > 10 µg/L

Cross Sections
(Figures 7-1C and 7-1D)

Qualifiers:
U = Not Detected,
J = Estimated Concentration.
("--" = No Sample)



SEE FIGURE 8-2D - LAW-1 AREA GW DATA

CP1

CP2

CP1'

CP2'

CP-MWC3
M: 0.00171U ● 0.00092J ● --
P: 7.0 ● 7.2 ● --
O: -290 ● -3 ● --

CP-MW02
M: 0.0812 ● 0.0979 ● --
P: 7.1 ● 7.2 ● --
O: -216 ● -171 ● --

CP-MWC2
M: 0.129 ● 0.00406 ● --
P: 7.0 ● 7.0 ● --
O: -185 ● -91 ● --

EMW-14S
M: 2.53 ● 5.03 ● --
P: 8.5 ● 9.2 ● --
O: -332 ● -224 ● --

CP-MW11
M: -- ● 0.00414 ● --
P: -- ● 6.7 ● --
O: -- ● -91 ● --

CP-MWC1
M: 1.84 ● 2.75 ● --
P: 9.6 ● 9.8 ● --
O: -350 ● -321 ● --

EMW-2S
M: 2.39 ● 1.63 ● --
P: 7.7 ● 8.9 ● --
O: -357 ● -255 ● --

CP-MWB3
M: 0.306 ● 0.0479 ● --
P: 6.8 ● 6.6 ● --
O: -343 ● -242 ● --

CP-MWB2
M: 1.11 ● 1.18 ● --
P: 7.2 ● 7.1 ● --
O: -384 ● -284 ● --

CP-MW13
M: -- ● -- ● 0.406
P: -- ● -- ● 7.9
O: -- ● -- ● -41

CP-MWB1
M: 1.24 ● 1.71 ● --
P: 9.5 ● 9.7 ● --
O: -372 ● -309 ● --

CP-MW04
M: 0.00467 ● 0.0169 ● --
P: 7.0 ● 6.8 ● --
O: -306 ● -335 ● --

AMW-02
M: 41.7 ● 28.1 ● --
P: 10.0 ● 9.8 ● --
O: -725 ● -417 ● --

CP-MW06
M: 4.9 ● 8.65 ● --
P: 9.3 ● 8.9 ● --
O: -598 ● -273 ● --

CP-MW14
M: -- ● -- ● 1.26
P: -- ● -- ● 9.1
O: -- ● -- ● -339

CP-MWA2
M: 0.00301 ● 0.0001J ● --
P: 6.7 ● 6.5 ● --
O: -319 ● -74 ● --

CP-MWA3
M: 0.00103U ● 0.00058J ● --
P: 6.7 ● 6.6 ● --
O: -286 ● -28 ● --

EMW-19S
M: 18.5 ● 28.5 ● --
P: 10.9 ● 11.1 ● --
O: -641 ● -478 ● --

CP-MWA1
M: 10.8 ● 14.3J ● --
P: 11.0 ● 11.1 ● --
O: -744 ● -432 ● --

CP-MW15
M: -- ● -- ● 619
P: -- ● -- ● 11.2
O: -- ● -- ● -376

AMW-03
M: 14.1 ● 11.1 ● --
P: 11.8 ● 12.2 ● --
O: -429 ● -493 ● --

EMW-1S
M: 0.0167 ● 0.0079 ● --
P: 7.0 ● 7.0 ● --
O: -294 ● -129 ● --

CP-MW07
M: -- ● 0.00072U ● --
P: -- ● 6.6 ● --
O: -- ● -177 ● --

CP-MW01
M: 6.61 ● 1.32 ● --
P: 10.0 ● 9.8 ● --
O: -467 ● -268 ● --

CP-MW08
M: -- ● 0.00165 ● --
P: -- ● 7.1 ● --
O: -- ● -162 ● --

CP-MW12
M: -- ● 0.00034U ● --
P: -- ● 7.3 ● --
O: -- ● -- ● --

CP-MW09
M: -- ● 0.164 ● --
P: -- ● 9.0 ● --
O: -- ● -343 ● --

SALT STORAGE PAD
WASTEWATER SETTLING BASIN
PORT MAINTENANCE BUILDING
SURGE STORAGE TANK
RE-MERC
BRINE SLUDGE PIT
SHOP
CLARIFIER
CHLORINE PLANT
CELL BUILDING
50% CAUSTIC
50% CAUSTIC
CHLORINE STORAGE TANKS
ELECTRIC SUBSTATION

CITY OF BELLINGHAM STORM SEWER LINE

0 50 100 200 300 400 Feet

MILL NORTH / TRUE NORTH (45°)

Aspect CONSULTING

2009-2010 Groundwater Dissolved Mercury, pH, and ORP, Caustic Plume Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-1E
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-1E CausticPlume_GW_Hg_pH_ORP.mxd

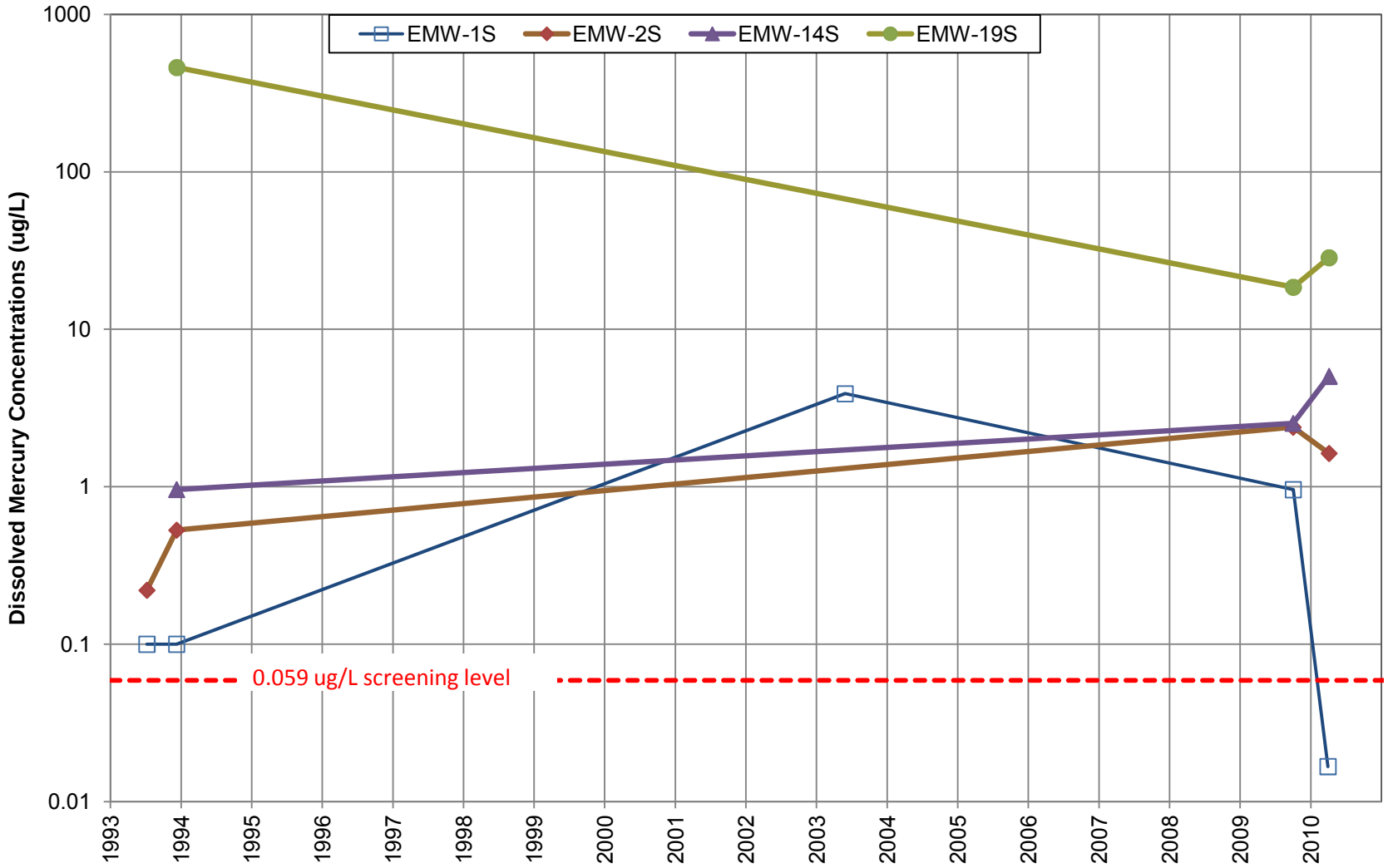


Figure 7-1F
Dissolved Mercury Concentrations, 1993-Present, Caustic Plume Subarea
GP West Site RI/FS

Aspect Consulting
5/13/2103
V:\070188 Port Bellingham\Deliverables\RI - Draft Final for Public Comment\5-13-2013\Figs 8-1F, 8-4C Dissolved Mercury timetrend plots-REV

Sample Location Type:

- Vapor Probe
- Ambient Air Sample

Mercury Concentration:

- Mercury <= 1.4 µg/m3
- Mercury > 1.4 µg/m3

Sample Location Labels:

Location ID
Sample Date
Hg in ug/m3

RI sample locations are circled in black

*[**Note:** U = Not Detected]*

Visible Elemental Mercury

Inferred Area with Mercury Soil Vapor Seasonally Above Unrestricted Soil Gas Screening Level (refer to text)

MILL NORTH
TRUE NORTH
45°

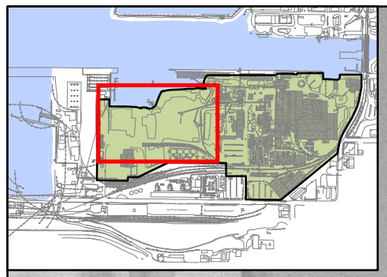
Aspect CONSULTING

Mercury Soil Vapor and Ambient Air Data, Caustic Plume Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-1G
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-1G CausticPlume_SoilVapor_Hg.mxd



Whatcom Waterway

ESB-22S

(5 - 6.5)	0.21
(10 - 11.5)	0.12U
(15 - 16.5)	0.12U

EMW-9S

(5 - 6.5)	0.12U
(10 - 11.5)	0.12U
(18 - 19.5)	0.13U

EMW-30D

(14 - 15.5)	0.0346
(16 - 17.5)	0.11U
(29 - 30.5)	4.5
(34 - 35.5)	0.12U

ESB-23S

(5 - 6.5)	0.11U
(13 - 14.5)	0.46
(17 - 18.5)	0.13U

GF-SB01

(4 - 8)	0.04
(8 - 12)	0.06U

AS-07

(0 - 2.5)	0.211
(2.5 - 5)	0.279
(5 - 7.5)	4.567
(7.5 - 10)	1.031

EMW-20S

(5 - 6.5)	20
(11 - 12.5)	7.0
(15 - 16.5)	13

CD-SB01

(0 - 4)	0.06
(8 - 12)	0.15

EMW-11S

(7 - 8.5)	0.11U

STB-02

(7.5 - 9)	11
(11.5 - 12)	5.5

AS-18

(0 - 2.5)	0.045
(2.5 - 5)	0.035
(5 - 7.5)	0.042
(7.5 - 10)	0.062

AS-17

(0 - 2.5)	1.036
(2.5 - 5)	3.39
(5 - 7.5)	6.358
(7.5 - 10)	4.992

ESB-19S

(5 - 6.5)	0.25
(10 - 11.5)	0.20
(25 - 26.5)	0.12U

EMW-8S

(5 - 6.5)	0.50
(18 - 19.5)	1.4

EMW-29D

(8 - 9.5)	0.12U
(13 - 14.5)	2.2
(33 - 34.5)	0.16
(38 - 39.5)	0.12U

EMW-7S

(5 - 6.5)	0.11U
(10 - 11.5)	0.68
(10 - 11.5)	0.700
(18 - 19.5)	2.9

AS-06

(0 - 2.5)	0.017
(2.5 - 5)	0.045
(5 - 7.5)	0.05
(7.5 - 10)	0.488

AS-05

(0 - 2.5)	0.099
(2.5 - 5)	2.134
(5 - 7.5)	0.522
(7.5 - 10)	2.251

CD-SB02

	Hg	cPAHs	TPH	Naph
(0 - 4)	3.12		3850J	
(8 - 12)	0.25	0.0394	1370J	0.19
(12 - 16)	0.17	ND	55	

AS-13

(1 - 5)	10.2

AS-15

(1 - 5)	10.2

ESB-20S

(2 - 3.5)	2500
(5 - 6.5)	5800
(14 - 15.5)	260
(20 - 21.5)	31

ESB-31S

(5 - 6.5)	2600
(10 - 11.5)	20
(18 - 19.5)	2.1

ESB-21S

(9 - 10.5)	0.23
(25 - 26.5)	1.3

STB-03

(3.5 - 5)	0.2
(7.5 - 9)	4.4
(11.5 - 13)	39

AS-14

(1 - 5)	10.2

AS-12

(1 - 5)	10.2

EMW-28D

(8 - 9.5)	2.3
(18 - 19.5)	0.13U
(18 - 19.5)	0.0417
(28 - 29.5)	0.0407
(28 - 29.5)	0.12U
(44 - 45.5)	0.1U

AS-08

(0 - 2.5)	4.217
(2.5 - 5)	0.199
(5 - 7.5)	0.809
(7.5 - 10)	0.351

AS-16

(0 - 2.5)	0.791
(2.5 - 5)	0.7
(5 - 7.5)	0.098
(7.5 - 10)	0.066

MG-MW01

(2.5 - 4)	0.12
(7.5 - 9)	0.22

EMW-6S

(5 - 6.5)	0.13
(10 - 11.5)	1.5
(13 - 14.5)	0.94
(19 - 20.5)	0.13U

STB-07

(0 - 1.5)	0.1U
(3.5 - 5)	0.1U
(5 - 6.5)	0.4

EMW-12S

(5 - 6.5)	0.11U
(10 - 11.5)	0.11U
(14 - 15.5)	0.13U

SEE FIGURE 7-2B - WASTEWATER SETTLING BASIN AND LAW-1 AREAS

WASTEWATER SETTLING BASIN

LT STORAGE PAD

SHOP

CELL BUILDING

Chemfix

0 40 80 160 240 320 Feet

Soil Sample Location:

- Max Hg ≤ 0.1 mg/kg
- 0.1 < Max Hg ≤ 24 mg/kg
- Max Hg > 24 mg/kg

RI sample locations are circled in black

Labels for Mercury-Only Samples:

Sample Location ID (Depth Interval in ft)	Hg in mg/kg

BOLD BLUE TEXT = concentration > 0.1 mg/kg
BOLD BROWN TEXT = concentration > 24 mg/kg

Data Qualifiers: *U = Not Detected, J = Estimated Concentration*

Labels for Samples w/ TPH, cPAHs, or Total Naphthalene Data:

Sample Location ID	Hg	cPAHs	TPH	Naph
(0 - 4)	3.12		3850J	
(8 - 12)	0.25	0.0394	1370J	0.19
(12 - 16)	0.17	ND	55	

Sample Depth Intervals (ft) — Mercury (mg/kg) — Total cPAHs TEC (mg/kg) — Total TPHs (mg/kg) — Total Naphthalenes (mg/kg)

Soil Mercury > 1050 mg/kg

Soil Mercury > 24 mg/kg

MILL NORTH / TRUE NORTH (45°)

Aspect CONSULTING

Mercury and TPH/PAH Concentrations in Soil, Confined Nearshore Fill/Chemfix Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-2A
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-2A ConfinedNearshoreFill_Soil_Hg_TPHPAH_Subarea.mxd

L1-MW06	
(3 - 5)	0.031
(5 - 7)	0.276
(13 - 14)	0.065
(16 - 17)	0.856

STB-01	
(3.5 - 5)	0.9
(7.5 - 9)	0.1U
(11.5 - 13)	0.6
(15 - 16.5)	0.8

L1-MW01	
(3 - 4)	0.195
(7 - 9)	1.02
(11 - 13)	3.72
(14 - 15)	51.5

ESB-18S	
(5 - 6.5)	0.13
(10 - 11.5)	0.43
(14 - 15.5)	74
(25 - 26.5)	0.11U

EMW-3S	
(5 - 6.5)	0.12U
(10 - 11.5)	0.12U
(18 - 19.5)	0.12U

L1-MW02	
(4 - 5)	0.219
(7 - 9)	6.49
(11 - 12)	3.37
(13 - 14)	0.075
(16 - 17)	0.143

L1-MW03	
(4 - 5)	3.01
(7 - 9)	0.121
(11 - 12)	0.356
(13 - 14)	0.256
(15 - 16)	0.147

ESB-19S	
(5 - 6.5)	0.25
(10 - 11.5)	0.20
(25 - 26.5)	0.12U

L1-MW05	
(3 - 5)	22.5
(7 - 9)	108
(11 - 12)	5.26
(13 - 14)	7.08
(16 - 18)	1.27

ESB-16S	
(5 - 6.5)	140
(10 - 11.5)	31
(18 - 19.5)	5.7

L1-MW04	
(3 - 4)	62.0
(5 - 7)	48.7
(8 - 10)	1760
(10 - 12)	5.65
(13 - 15)	3.31

CP-MW05	
(2.5 - 4)	32.2
(5 - 6.5)	4.67
(7.5 - 9)	23.7
(10 - 11.5)	101
(12.5 - 14)	375
(15 - 16.5)	14.6
(17.5 - 19)	33.8
(20 - 21.5)	4.02
(22 - 23)	0.078
(26 - 27)	0.031
(30 - 31)	0.015J
(34 - 35)	0.019
(38 - 39)	0.014J

STB-12	
(3.5 - 5)	0.9
(7.5 - 9)	16

SITE-6	
(0 - 0.5)	1

CP-MW03	
(1.5 - 2.5)	0.709
(13 - 15)	1050

CP-MW02	
(1.5 - 2.5)	0.038
(10 - 12)	0.064

SITE-5	
(0 - 0.5)	21

SITE-3	
(0 - 0.5)	82

SITE-4	
(0 - 0.5)	10

AS-04	
(0 - 2.5)	0.217
(2.5 - 5)	0.065
(5 - 7.5)	0.063
(5 - 7.5)	0.064
(7.5 - 10)	0.119

STB-15	
(3.5 - 5)	69
(7.5 - 9)	0.9

ESB-17S	
(7 - 8.5)	0.37
(11 - 12.5)	0.14
(11 - 12.5)	1.5323
(20 - 21.5)	1.1

ESB-14S	
(5 - 6.5)	0.60
(10 - 11.5)	200
(22 - 23.5)	0.13U

SITE-2	
(0 - 0.5)	42

SITE-7	
(0 - 0.5)	18

SITE-8	
(0 - 0.5)	119

SITE-1	
(0 - 0.5)	38

ESB-15S	
(5 - 6.5)	0.11U
(10 - 11.5)	56
(22 - 23.5)	0.23

EMW-14S	
(5 - 6.5)	3.6
(10 - 11.5)	160
(16 - 17.5)	47

EMW-15S	
(5 - 6.5)	2.6

CP-MWC1	
(2 - 3)	0.026
(12 - 13)	0.088

STB-04	
(3.5 - 5)	3.1
(7.5 - 9)	0.1U

STB-13	
(5 - 6.5)	1.1

WASTEWATER SETTLING BASIN

SALT STORAGE PAD

SEE FIGURE 7-1B - MERCURY SOURCE AREA DETAIL

STB-16	
(0.5 - 2)	0.7
(3.5 - 5)	15
(7.5 - 9)	47

STB-14	
(3.5 - 5)	1.7
(7.5 - 9)	7.8
(10.5 - 12)	0.5
(15 - 16.5)	0.1U

CP-SB02	
(1 - 2)	0.284
(3 - 4)	0.259
(5 - 6)	0.791
(9 - 10)	29.2
(17 - 18)	0.036

CP-SB03	
(2 - 3)	1.14J
(4 - 5)	0.330
(8 - 9)	18.2
(11.5 - 12)	560

EMW-2S	
(5 - 6.5)	4.2
(10 - 11.5)	2.1
(14 - 15.5)	4.5

CP-SB04	
(2 - 3)	2.64
(4 - 5)	18.5
(5 - 6)	1.98

STB-21	
(0 - 1.5)	1.0
(3.5 - 5)	3.0

CP-SB05	
(1 - 2)	3.16
(3 - 4)	3.22
(4 - 5)	5.51
(8 - 9)	22.6
(12 - 14)	6.09

CP-SB22	
(2 - 3)	2.740
(4 - 5)	4.320
(6 - 7)	18.7

STB-20	
(0 - 1.5)	0.1U
(3.5 - 5)	0.2
(7.5 - 9)	0.1U

MERCURY RECLAIM STORAGE TANK
COLLECTION TANK
SURGE STORAGE TANK
PORT MAINTENANCE BUILDING
RE-MERC
MERCURY RECOVERY UNIT
BRINE SLUDGE PIT
SUMP
BRINE SLUDGE TANK
SATURATORS
CLARIFIER
CHLORINE
SHOP

0 20 40 80 Feet

Soil Mercury > 24 mg/kg

Soil Mercury > 1050 mg/kg

Area of Visible Elemental Mercury

Previous Cleanup Areas

Soil Sample Location:

- Max Hg ≤ 0.1 mg/kg
- 0.1 < Max Hg ≤ 24 mg/kg
- Max Hg > 24 mg/kg

Sample Location ID
(Depth Interval in ft) Hg in mg/kg

BOLD BLUE TEXT = concentration > 0.1 mg/kg
BOLD BROWN TEXT = concentration > 24 mg/kg

Note: *Data represent current (post-excavation) conditions based on available information.*

RI sample locations are circled in black

Data Qualifiers:
U = Not Detected
J = Estimated Concentration

MILL NORTH
TRUE NORTH
45°

Aspect CONSULTING

Mercury Concentrations in Soil, Wastewater Settling Basin and Law-1 Areas

GP West Site RI/FS - Bellingham, WA

DATE:	PROJECT NO.
Apr 2013	070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-2B
REVISED BY: PPW/EAH	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-2B WastewaterSettlingBasinLaw1_Soil_Hg.mxd

Whatcom Waterway

SEE FIGURE 8-2D - LAW-1 AREA GW DATA

Wastewater Settling Basin

Confined Nearshore Fill/ Chemfix Subarea

Chemfix

EMW-10S
M: 0.00269 ● 0.00053U ● --
P: 6.5 ● 6.3 ● --
O: -290 ● -64 ● --

EMW-20S
M: 0.0102 ● 0.00172 ● --
P: 6.5 ● 6.2 ● --
O: -233 ● -47 ● --

EMW-8S
M: 0.001U ● 0.00046U ● --
P: 6.8 ● 6.8 ● --
O: -230 ● -205 ● --

EMW-29D
M: 0.00188 ● 0.00507 ● --
P: 7.4 ● 7.4 ● --
O: -305 ● -122 ● --

EMW-7S
M: 0.00084J ● 0.00113 ● --
P: 6.5 ● 6.5 ● --
O: -220 ● -139 ● --

CF-MW01
M: 0.00456J ● 0.00221J ● --
P: 6.6 ● 6.7 ● --
O: -257 ● -148 ● --

CF-MW02
M: 0.0108 ● 0.00503 ● --
P: 6.4 ● 6.6 ● --
O: -226 ● -71 ● --

CP-MW11
M: -- ● 0.00414 ● --
P: -- ● 6.7 ● --
O: -- ● -91 ● --

EMW-14S
M: 2.53 ● 5.03 ● --
P: 8.5 ● 9.2 ● --
O: -332 ● -224 ● --

EMW-2S
M: 2.39 ● 1.63 ● --
P: 7.7 ● 8.9 ● --
O: -357 ● -255 ● --

EMW-16S
M: 0.0628 ● 0.109 ● --
P: 6.7 ● 6.7 ● 6.6
O: -402 ● -254 ● -102

EMW-12S
M: 0.00268J ● 0.00286 ● --
P: 6.7 ● 6.8 ● --
O: -336 ● -206 ● --

0 40 80 160 240 320 Feet

Well Completion

- Lower Sand Monitoring Well
- Fill Unit Monitoring Well
- Intertidal Well Point

Dissolved Mercury in Groundwater

- Mercury <= 0.059 ug/L
- Mercury > 0.059 ug/L

Well ID → **CP-MW03**
Dissolved Mercury (in µg/L) → M: 0.763 ● 0.391 ● 0.48
pH → P: 7.2 ● 7.3 ● 7.0
ORP (mV) → O: -292 ● -142 ● -74
2009 Mar-Apr 2010 — Dec 2010

Fill Unit Groundwater pH:

> 8.5

Fill Unit Dissolved Mercury in Groundwater:

> 0.059 µg/L

Qualifiers:
U = Not Detected,
J = Estimated Concentration.
("--" = No Sample)

RI sample locations are circled in black

Note:*TPH/PAH groundwater data covering this area are presented on Figure 7-5B (Million Gallon Tanks Subarea)*

MILL NORTH — TRUE NORTH (45°)

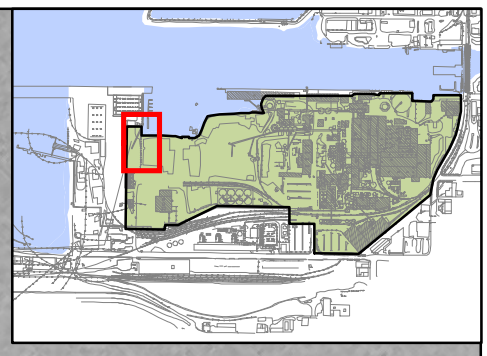
Aspect CONSULTING

2009-2010 Groundwater Dissolved Mercury, pH, and ORP, Confined Nearshore Fill/Chemfix Subarea

GP West Site RI/FS - Bellingham, WA

DATE: May 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-2C
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-2C Chemfix_GW_Hg_pH_ORP.mxd



AMW-01
M: 0.00319 ● NS
P: 6.5 ● NS
O: -233 ● NS
C: 13 ● NS
S: 6.94 ● NS

L1-WP1
M: 1.34 ● 0.125 & 0.0739
P: 7.8 ● 7.5 & 7.7
O: -62 ● -96 & -113
C: 21 ● 7.9 & 7.9
S: 2.75 ● 0.0493 & 0.0056

L1-WP2
M: NS ● 0.131 & 0.164
P: NS ● 8.5 & 8.4
O: NS ● -203 & -120
C: NS ● 29.0 & 22.6
S: NS ● 3.78 & 3.08

L1-WP3
M: NS ● 0.0511 & 0.0533
P: NS ● 8.0 & 8.2
O: NS ● -176 & -115
C: NS ● 17.9 & 18.6
S: NS ● 0.0262 & 0.135

L1-MW06
M: NS ● 0.432
P: NS ● 7.8
O: NS ● -351
C: NS ● 689
S: NS ● 85.3

L1-MW02
M: 35 ● 2.09
P: 8.8 ● 9.0
O: -128 ● -208
C: 171 ● 116
S: 3.13 ● 1.39

L1-MW03
M: 0.025 ● 0.0224
P: 6.9 ● 9,6
O: -65 ● -91
C: 94 ● 89
S: 2.38 ● 0.0511

LAW-1
M: 1.03 ● 17.8
P: 8.6 ● 10.2
O: -178 ● -311
C: 226 ● 176
S: 10.33 ● 6.98

L1-MW01
M: 0.46 ● 14.6
P: 8.9 ● 10.1
O: -160 ● -275
C: 288 ● 248
S: 7.04 ● 5.68

CP-MW10
M: 0.00979 ● NS
P: 7.0 ● NS
O: -70 ● NS
C: 73 ● NS
S: 2.18 ● NS

L1-MW05
M: 4.06 ● NS
P: 7.7 ● NS
O: -51 ● NS
C: 102 ● NS
S: 1.98 ● NS

L1-MW04
M: 0.317 ● NS
P: 7.5 ● NS
O: -591 ● NS
C: 56.2 ● NS
S: 0.124 ● NS

CP-MW03
M: 0.48 ● NS
P: 7.0 ● NS
O: -74 ● NS
C: 60 ● NS
S: 0.03 ● NS

6 7 8 9 10 11 12 13

WASTEWATER SETTLING BASIN

0 20 40 80 120 160 Feet

Sample Location (symbol):

- Fill Unit Monitoring Well
- Intertidal Well Point

Mercury in Groundwater (symbol color):

- Dissolved Mercury <= 0.059 ug/L
- Dissolved Mercury > 0.059 ug/L

RI sample locations are circled in black

Well ID → **LAW-1**
Dissolved Mercury (in µg/L) → **M:** 1.03 ● 17.8
pH → **P:** 8.6 ● 10.2
ORP (mV) → **O:** -178 ● -311
Dissolved Organic Carbon (mg/L) → **C:** 226 ● 176
Sulfide (mg/L) → **S:** 10.33 ● 6.98
Dec 2010 / Jan-Feb 2011*

("NS" = No Sample)

Qualifiers: *U = Not Detected, J = Estimated Concentration*

**For well points, February sample results separated by "&" were collected 4 hours apart (refer to text).*

Fill Unit Groundwater pH > 8.5

Fill Unit Dissolved Hg in Groundwater > 0.059 µg/L

Groundwater Elevation Contour from 2/3/2011 (elevation in feet, MLLW vertical datum) tide at approx. 5 feet, MLLW

MILL NORTH / TRUE NORTH 45°

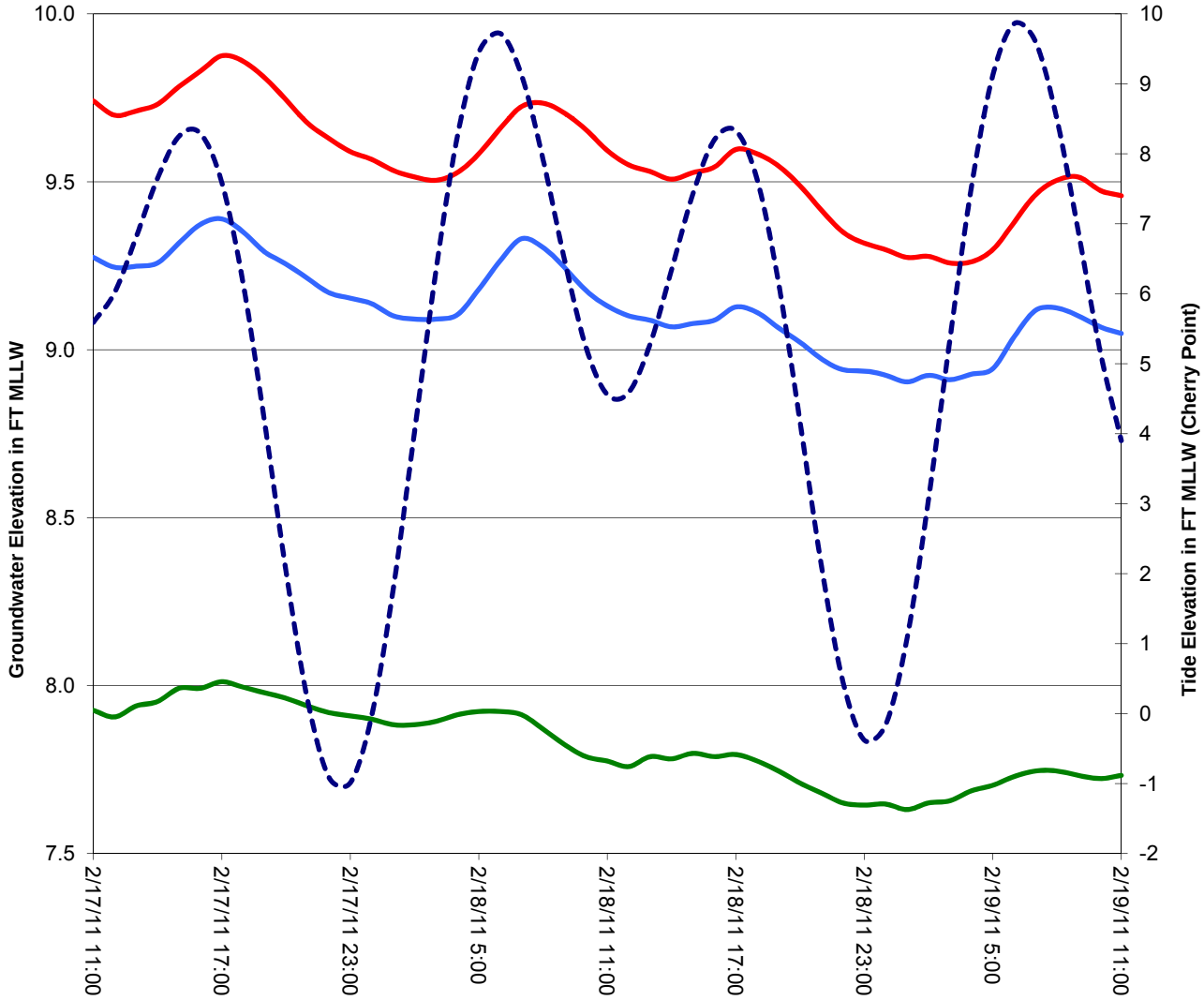
Aspect CONSULTING

2010-2011 Groundwater Chemistry Data, Law-1 Area

GP West Site RI/FS - Bellingham, WA

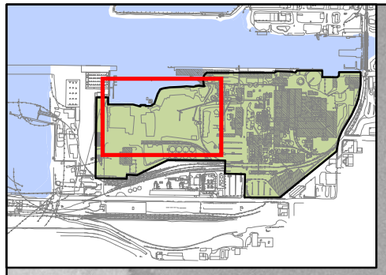
DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-2D
REVISED BY: - - -	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-2D LAW-1 Area GW.mxd



Well	Mean GW Elevation in FT (Serfes Method)	Groundwater Fluctuation in FT	Tidal Efficiency in %
L1-MW02	9.47	0.37	4.1%
L1-MW06	7.75	0.14	1.5%
LAW-1	9.06	0.31	3.4%

Figure 7-2E
Law-1 Area Tidal Study Data, February 2011



Whatcom Waterway

Confined Nearshore Fill/
Chemfix Subarea

Chemfix

Wastewater
Settling
Basin

AS-07
05/27/03
0.158

AS-13
05/27/03
0.779

AS-15
05/28/03
0.117

AS-12
05/28/03
0.142

AS-14
05/28/03
0.143

CP-MW03V
09/29/09
0.04

CP-VP02
04/01/10
0.01

CP-VP09
02/18/11
0.028

0 40 80 160 240 320 Feet

Vapor Sample Location:

- Mercury <= 1.4 ug/m3
- Mercury > 1.4 ug/m3

[**Note:** U = Not Detected]

Location ID
Sample Date
Hg in ug/m3

RI sample locations are circled in black

MILL NORTH
TRUE NORTH
45°

Aspect CONSULTING

Mercury Soil Vapor Data, Confined Nearshore Fill/Chemfix Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-2F
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-2F Chemfix_SoilVapor_Hg.mxd

EMW-6S

EMW-4S

EMW-1S

LAW-6

Swale Outline
(Topographic)

PORT OF BELLINGHAM PROPERTY BOUNDARY

BNSF PROPERTY BOUNDARY

PUGET SOUND ENERGY PROPERTY BOUNDARY

SW-SB02
(0 - 0.5) 3.61
(0.5 - 1) 0.526
(2 - 3) 0.726
(5 - 6) 1.67
(8 - 9) 1.08
(11 - 12) 0.66
(14 - 15) 0.136

SW-SB01
(0 - 0.5) 0.509
(0.5 - 1) 0.246
(2 - 3) 0.035
(5 - 6) 0.064
(8 - 9) 0.128

SW-HA05
(0 - 0.5) 0.038
(0.5 - 1) 0.152

SW-HA06
(0 - 0.5) 0.701
(0.5 - 1) 0.057

SW-HA04
(0 - 0.5) 0.764
(0.5 - 1) 0.405

SW-HA03
(0 - 0.5) 3.41
(0.5 - 1) 0.223

SW-HA02
(0 - 0.5) 0.794
(0.5 - 1) 0.177

SW-HA01
(0 - 0.5) 2.06
(0.5 - 1) 1.89

D1
(0 - 0.5) 63
(0.5 - 1) 73

D2
(0 - 0.5) 39
(0.5 - 1) 14

D3
(0 - 0.5) 530
(1 - 1.5) 13
(2 - 2.5) 5.4

D4
(1 - 1.5) 2.6
(2 - 2.5) 2.2

D5
(0 - 0.5) 14
(0 - 0.5) 31
(0.5 - 1) 5.3

D6
(0 - 0.5) 2.5
(0.5 - 1) 4.7

D7
(0 - 0.5) 41
(0.5 - 1) 3.5

D8
(0 - 0.5) 45
(0.5 - 1) 3.7

D9
(0 - 0.5) 21

TRENCH
(0 - 0.5) 48

B1
(0 - 0.5) 6.5
(0.5 - 1) 49

B2
(0 - 0.5) 0.47

B3
(0 - 0.5) 45

BK-02
(0 - 0.5) 3

SS-11
(0 - 0.5) 127

0 30 60 120 180 240 Feet

Soil Sample Location:

- Max Hg ≤ 0.1 mg/kg
- 0.1 < Max Hg ≤ 24 mg/kg
- Max Hg > 24 mg/kg

RI sample locations are circled in black

Sample Location ID
(Depth Interval in ft) Hg in mg/kg

BOLD BLUE TEXT = concentration > 0.1 mg/kg
BOLD BROWN TEXT = concentration > 24 mg/kg

Qualifier Note: *U = Not Detected, J = Estimated Concentration*

Monitoring Well Locations

Soil Mercury > 24 mg/kg

Note: *Data represent current (post-excavation) conditions based on available information.*

MILL NORTH / TRUE NORTH 45°

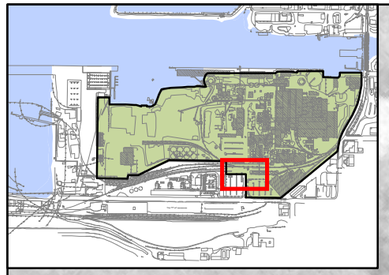
Aspect CONSULTING

Mercury Concentrations in Soil, Stormwater Swale Subarea

GP West Site RI/FS - Bellingham, WA

DATE:	PROJECT NO.
Apr 2013	070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-3A
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RIFinal\7-3A StormwaterSwale_Soil_Hg.mxd



AS-10
(0 - 2.5) 30.6
(2.5 - 5) 1.975
(5 - 7.5) 11.4
(7.5 - 10) 1344

WLSS-4
(1.3 - 1.8) 41

WLSS-16
(5 - 5.5) 1100

WLSS-17
(1.3 - 1.8) 31

WLSS-5
(1.3 - 1.8) 47

WLSS-15
(1.3 - 1.8) 360

WLSS-14
(1.3 - 1.8) 3.8

WLSS-6
(1.3 - 1.8) 22

WLSS-7
(1.3 - 1.8) 24

PR-SB04
(1 - 3) 10.4
(5 - 7) 59.3
(10 - 12) 1.29

PR-MW02
(1 - 2.5) 0.818
(3.5 - 5) 0.561
(9 - 10) 0.021
(13 - 14) 0.04
(17 - 18) 0.027

PR-MW01
(1 - 3) 0.773
(5 - 7) 219
(9 - 10) 0.036
(13 - 14) 0.037
(17 - 18) 0.041

PR-MW03
(1 - 2) 134
(3 - 4) 234
(7 - 8) 49.3
(9 - 10) 0.577
(13 - 14) 0.097

PLHA-9-24-36
(2 - 3) 590

EMW-13S
(5 - 6.5) 320
(10 - 11.5) 58
(15 - 16.5) 2.8

PLHA-9-0-6
(2 - 3) 14,000

AS-11
(0 - 2.5) 4.51
(2.5 - 5) 0.302
(5 - 7.5) 0.022
(7.5 - 10) 0.101

PR-SB05
(5 - 7) 0.007J
(9 - 10) 0.026
(13 - 14) 0.02
(17 - 18) 0.027

PLHA-6
(2 - 3) 38

PLHA-1
(6.5 - 7.5) 2.1
(9 - 10) 0.4

PLHA-2A
(2 - 3) 10

PLHA-4-0-6
(6.5 - 7) 0.1U

PLHA-4-36-42
(6.5 - 7) 0.1U

PR-SB02
(4 - 5) 0.123
(6 - 7) 0.021
(9 - 10) 0.018
(13 - 14) 0.02
(17 - 18) 0.029

PLHA-7
(4 - 5) 0.1U

PLHA-4
(6.5 - 7) 0.1

PLHA-3
(7 - 8) 0.1U
(10 - 11) 0.1U

PLHA-2
(2 - 3) 0.1U

PLHA-5
(2 - 3) 0.1

PLHA-8-0-6
(2 - 3) 150

PLHA-8-36-42
(2 - 3) 10

WLSS-3
(1.3 - 1.8) 10

WLSS-2
(1.3 - 1.8) 41

WLSS-1
(1.3 - 1.8) 0.4

WLSS-12
(1.3 - 1.8) 19

WLSS-8
(1.3 - 1.8) 0.1U

PR-SB03
(1 - 3) 0.694
(5 - 7) 0.062
(9 - 10) 0.035
(13 - 14) 0.019
(17 - 18) 0.06

WLSS-9
(1.3 - 1.8) 0.1U

WLSS-13
(5 - 5.5) 0.1

WLSS-10
(5 - 5.5) 0.9

WLSS-11
(5 - 5.5) 11

GF-SB06
(4 - 8) 0.28
(8 - 12) 0.04U

AS-09
(0 - 2.5) 0.357
(2.5 - 5) 0.108
(5 - 7.5) 0.066
(7.5 - 10) 0.015

PR-SB06
(0.5 - 2.5) 0.374
(3.5 - 5) 0.095
(5 - 6.5) 0.877
(9 - 10) 0.056
(13 - 14) 0.021
(17 - 18) 0.034

ESB-24S
(5 - 6.5) 0.12
(10 - 11.5) 0.12
(14 - 15.5) 0.37

ESB-25S
(5 - 6.5) 0.12U
(10 - 11.5) 0.40
(18 - 19.5) 0.14U

ESB-26S
(5 - 6.5) 0.15U
(10 - 11.5) 0.13U
(18 - 19.5) 0.14U

BK-05
(0 - 0.5) 0.1U

LW-SS01
(0 - 0.5) 0.19J

GROUNDWATER DATA FRAME:

PR-MW02
Hg: 0.00136J ● 0.00213
pH: 10.6 ● 10.5

PR-MW01
Hg: 0.0343 ● 0.0143
pH: 9.0 ● 8.4

EMW-13S
Hg: 0.00662 ● 0.0121
pH: 7.6 ● 7.7

PR-MW03
Hg: -- ● 0.212
pH: -- ● 7.9

Dissolved Mercury in Groundwater
Mercury <= 0.059 ug/L
Mercury > 0.059 ug/L

EMW-13S
Hg: 0.00662 ● 0.0121 — Well ID; Dissolved Mercury (in µg/L)
pH: 7.6 ● 7.7 — pH
2009 — 2010

0 15 30 60 90 120 Feet

Sample Location ID
(Depth Interval in ft) Hg in mg/kg

BOLD BLUE TEXT = concentration > 0.1 mg/kg
BOLD BROWN TEXT = concentration > 24 mg/kg

Soil Sample Location:
- Max Hg ≤ 0.1 mg/kg
- 0.1 < Max Hg ≤ 24 mg/kg
- Max Hg > 24 mg/kg

RI sample locations are circled in black

Soil Mercury > 24 mg/kg

Data Qualifiers: *U = Not Detected, J = Estimated Concentration*

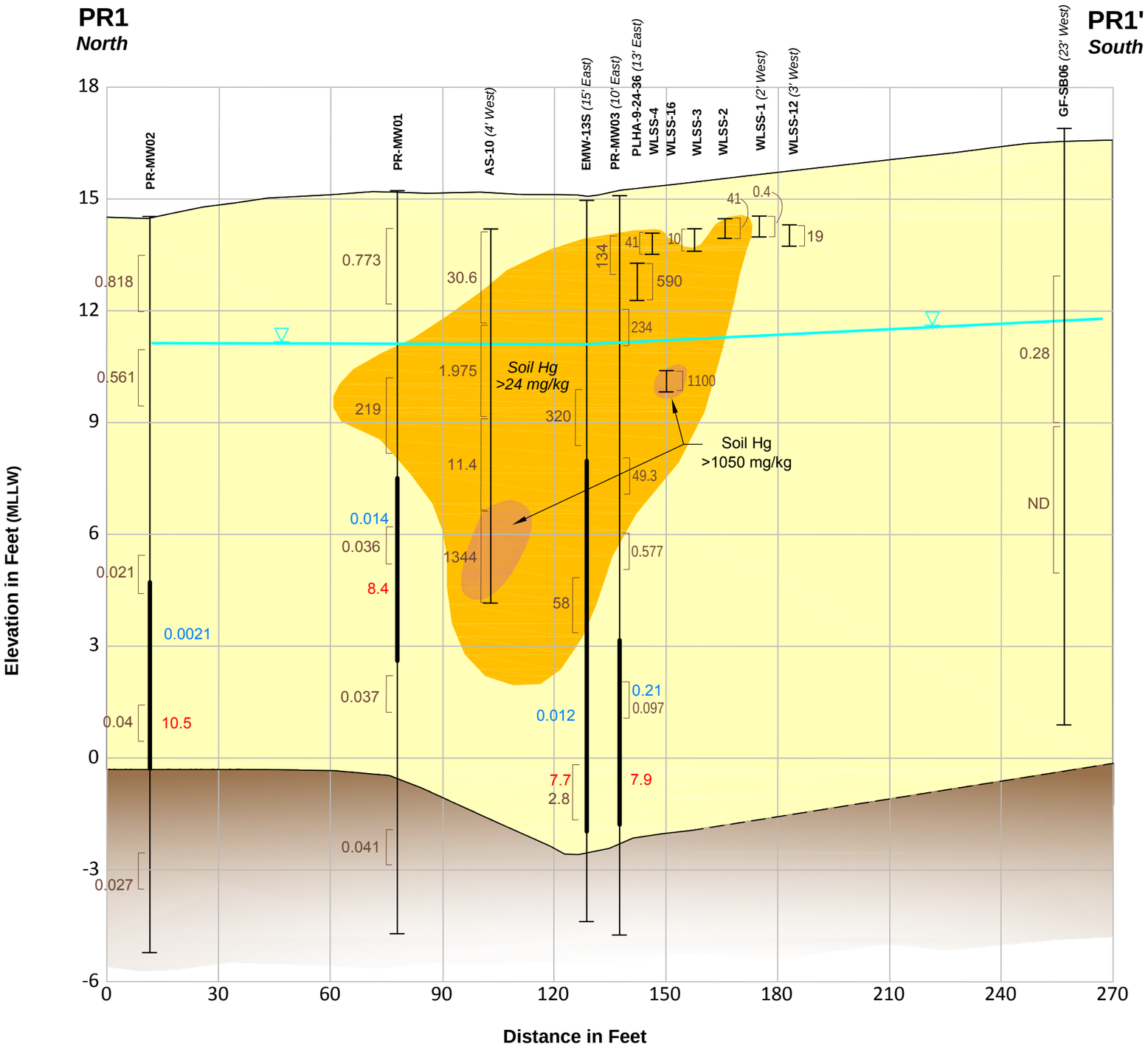
MILL NORTH — TRUE NORTH (45°)

Aspect CONSULTING

Mercury Concentrations in Soil and Groundwater
Laurel Street Pipe Rack Subarea
GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-4A
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-4A LaurelStreet_Soil_GW_Hg.mxd



LEGEND

- Fill Unit
- Tidal Flat Aquitard
- Water Table (March 2010)
- 0.21 Dissolved Mercury in µg/L (March 2010)
- 6.9 Groundwater pH (March 2010)
- 0.026 Soil Mercury in mg/kg
- ND Non Dectected Mercury

(50 Ft South)

- Distance and Direction of Offset from Section Line
- Screened Interval
- Total Depth

Horizontal Scale: 1" = 30'
Vertical Scale: 1" = 3'
(10x Exaggeration)

0 30 60
Feet

Cross Section PR1-PR1'
Laurel Street Pipe Rack Subarea

GP West Site RI/FS
Bellingham, Washington

Aspect Consulting	APRI-2013	BY: MAV/SCC	FIGURE NO. 7-4B
	PROJECT NO. 070188	REV BY: SCC	

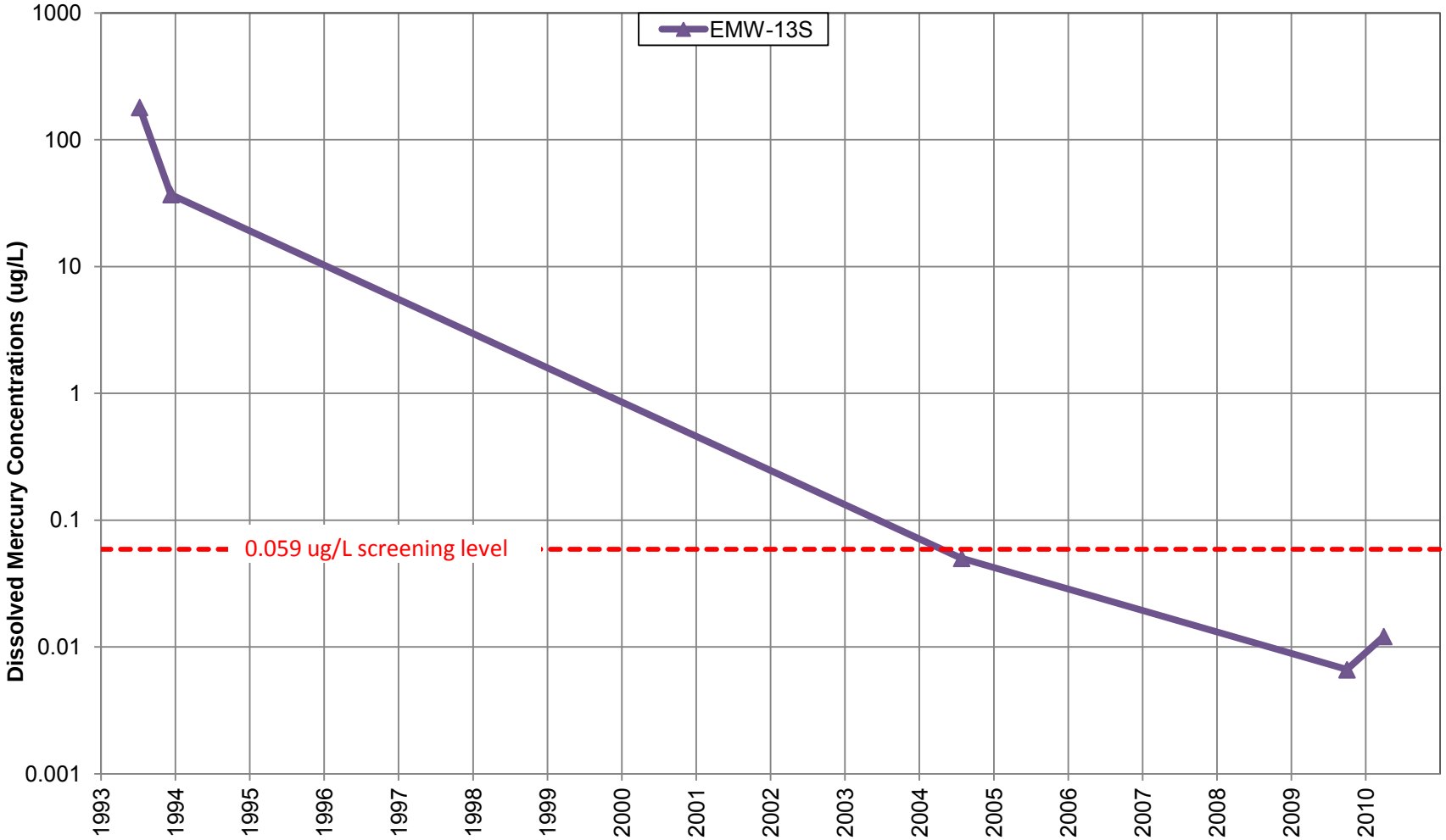
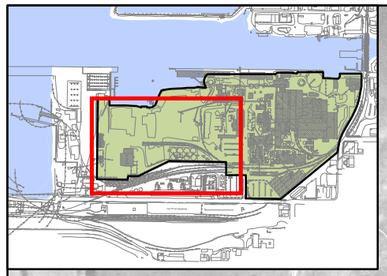


Figure 7-4C
Dissolved Mercury Concentrations, 1993-Present,
Laurel Street Pipe Rack Subarea
GP West Site RI/FS

Aspect Consulting
5/13/2013
V:\070188 Port Bellingham\Deliverables\RI - Draft Final for Public Comment\5-13-2013\Figs 8-1F, 8-4C Dissolved Mercury timetrend plots-REV



Whatcom Waterway

Detail of Million Gallon Tank Excavation Area

MG-SB12	TPH	Naph	cPAH
(2-3)	442J		
(6-7)	**4580J**	1.3	**0.766**
(8-9)	2030J		
(10-11)	570J	**13**	**2.85**
(12-13)	2250J		
(13-14)	3240J		

MG-SB07	TPH	Naph	cPAH
(1-2)	1010	0.41	**0.32**
(6-8)	**9300**	**4.1**	**3.55**
(12-13)	198J	0.12	0.0745
(15-16)	2070	0.11	0.0277

SS-4	TPH	Naph	cPAH
(1.5-1.5)	745		

SS-3	TPH	Naph	cPAH
(1.5-1.5)	1585		

SS-5	TPH	Naph	cPAH
(3-3)	1724		

TANK #2

TANK #1

SS-1	TPH	Naph	cPAH
(2-2)	701		

SS-2	TPH	Naph	cPAH
(1.5-1.5)	2105		

0 5 10 20 Feet

CD-SB01	TPH	Naph	cPAH
(0-4)	947J		
(8-12)	361		

GF-SB03	TPH	Naph	cPAH
(0-4)	154		
(8-12)	49.4		

MG-SB14	TPH	Naph	cPAH
(2-3)	201J		
(5-6)	1820J		
(7-8)	1700J		
(9-10)	36.6J	0.23	0.0405
(12-13)	272J	0.14	0.105

CD-SB03	TPH	Naph	cPAH
(0-4)	1040	0.023	0.0153
(4-8)	ND		

AS-08	TPH	Naph	cPAH
(0-2.5)	2810		
(2.5-5)	850		
(5-7.5)	284		
(7.5-10)	2290		

CD-SB02	TPH	Naph	cPAH
(0-4)	3850J		
(8-12)	1370J	0.051U	0.0394
(12-16)	55	0.024U	ND

MG-MW04	TPH	Naph	cPAH
(2-3)	524J		
(6-7)	91.0J		
(7-8)	1750J	1.1	0.059
(9-10)	590J		
(11-12)	1170J	**1.8**	**4.22**

CD-SB04	TPH	Naph	cPAH
(0-4)	96J	0.0071U	**0.206**
(4-8)	96J		

MG-MW05	TPH	Naph	cPAH
(2-3)	366J	0.12	0.0847
(5-6)	146J		
(7-8)	1170J		
(9-10)	57.0J	0.6	0.0306
(11-12)	300J		

MG-SB13	TPH	Naph	cPAH
(2-3)	**4700J**		
(5-6)	2970J	0.28	**0.171**
(7-8)	2620J		
(9-10)	226J	0.21	0.0503
(12-13)	2840J		

MG-SB15	TPH	Naph	cPAH
(3-4)	254J		
(5-6)	830J	0.12	0.109
(7-8)	17.5J	0.011	0.00211J
(9-10)	58.0J		
(12-13)	410J		

GF-SB04	TPH	Naph	cPAH
(0-4)	220	0.0052U	
(4-8)	150		

MG-MW01	TPH	Naph	cPAH
(2.5-4)	1260		
(7.5-9)	2700		

MG-SB16	TPH	Naph	cPAH
(2-3)	985J		
(5-6)	1760J		
(7-8)	98.0J	0.075	0.028
(9-10)	227J	0.13	**0.185**
(12-13)	14.9J		

MG-SB04	TPH	Naph	cPAH
(2-4)	124J	0.0095U	0.048
(6-8)	600	0.21	0.108
(11-12)	1130	0.18	0.081
(16-18)	72J	0.035	0.0146

MG1

SEE DETAIL

GF-SB05	TPH	Naph	cPAH
(0-4)	139.4		
(4-8)	24.5		

MG-SB05	TPH	Naph	cPAH
(2-4)	371	0.018	**0.338**
(7-8)	17.5J	0.014U	0.00162
(10-11)	34J	**2.6**	0.0252
(14-15)	153J	0.062	0.00596

MG-SB03	TPH	Naph	cPAH
(0-4)	197		
(4-8)	216		
(8-12)	834		

MG1'

TO STEAM PLANT

MG-SB01	TPH	Naph	cPAH
(0-2)	440J		
(2-3)	196		

MG-SB02	TPH	Naph	cPAH
(0-4)	2650		
(4-8)	289		

MG-SB06	TPH	Naph	cPAH
(3-5)	380	**17**	**0.527**
(7-8)	450	**50**	**0.25**
(10-11)	64J	**6.5**	0.0797

MG-SB10	TPH	Naph	cPAH
(1-2)	1190	0.086	**2.29**
(7-8)	75J	0.042	0.0109
(11-12)	196J	0.65	0.0709
(15-16)	320J	0.15	0.0369

MG-SB08	TPH	Naph	cPAH
(1-2)	1270	0.019	**0.652**
(7-8)	800	0.087	0.0422
(11-12)	179J	0.3	**0.173**
(15-16)	309J	0.11	0.053

MG-SB09	TPH	Naph	cPAH
(2-4)	310J	0.044	**1.07**
(6-7)	**10400**	0.86	**1.14**
(11-12)	1310	0.28	0.0497
(19-20)	102J	0.034	0.0218

MG-SB11	TPH	Naph	cPAH
(2-3)	2520J		
(5-6)	1770J		
(7-8)	490J	0.81	**1.3**
(9-10)	99.0J	0.063	0.053
(12-13)	360J		

GF-SB06	TPH	Naph	cPAH
(4-8)	138		
(8-12)	ND		

0 50 100 200 Feet

Soil Sample Location with No Screening Level Exceedance

Soil Sample Location with Screening Level Exceedance

Sample Location ID

MG-SB05	TPH	Naph	cPAH
(2-4)	371	0.031	**0.338**
(7-8)	17.5J	ND	0.00162

Total cPAHs (TEQ) (mg/kg)

Naphthalene (mg/kg)

Total TPHs* (mg/kg)

Sample Depth Intervals (ft)

RI sample locations are circled in black

Million Gallon Tanks Excavation Area (RETEC, 2007)

Soil TPH > 4000 mg/kg

Soil Naphthalene > 1.6 mg/kg

Cross Section MG1-MG1' *(Figure 8-5B)*

** Total TPH is either Bunker C or the sum of detected diesel- and oil-range TPH.*

BROWN, BOLD TEXT indicates exceedance of unrestricted soil screening level

Note: *Data from the former chip dump portion of the CNF subarea (CD- borings; Section 8.2.2) are shown for assessment of potential TPH sources to groundwater.*

Qualifiers: *U = Not Detected*
J = Estimated Concentration

Oil Pipelines:

- at or above ground surface
- below ground surface in concrete-lined trench
- below ground surface in unlined trench

MILL NORTH / TRUE NORTH (45°)

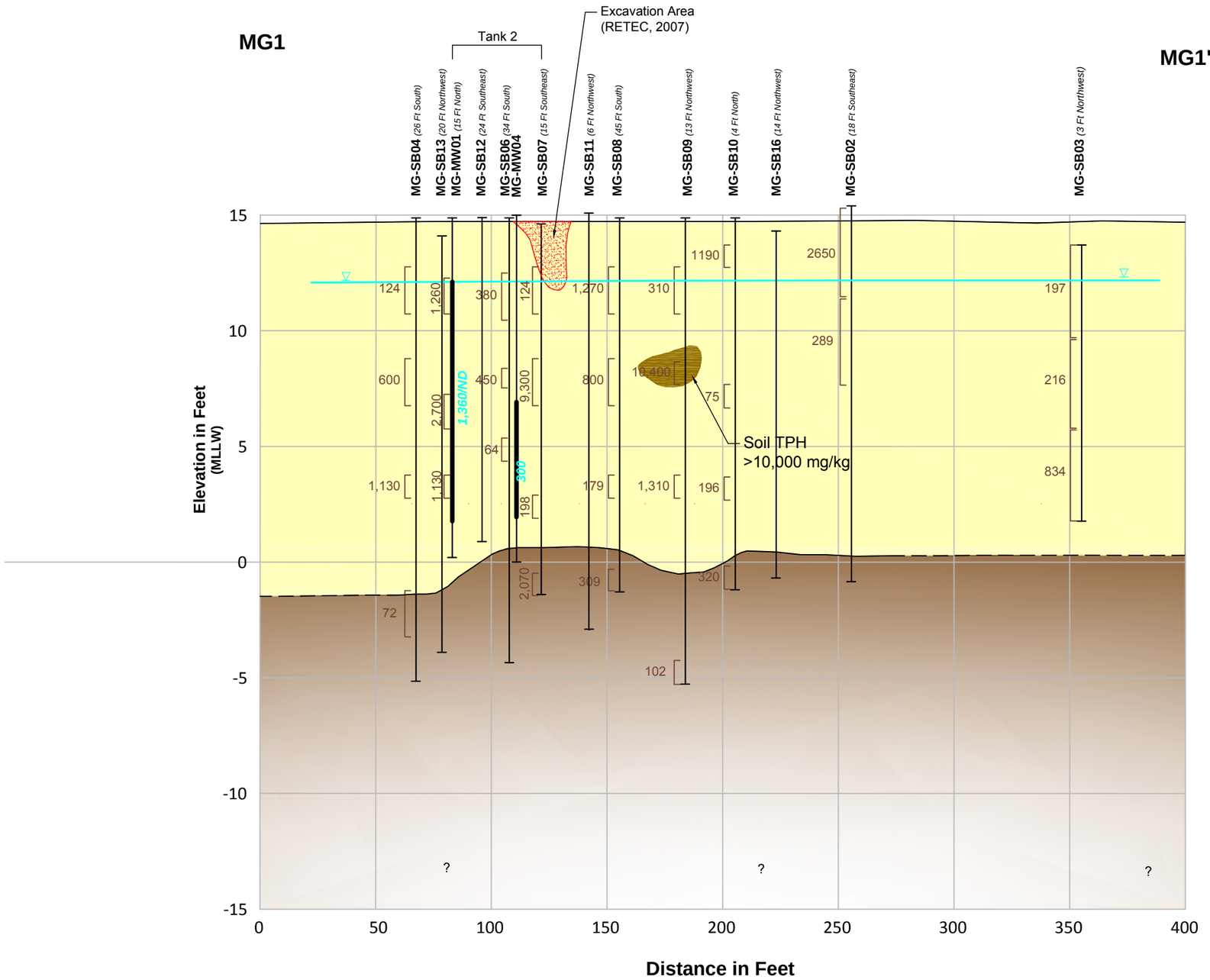
Aspect CONSULTING

TPH, Naphthalene, and cPAH Concentrations in Soil, Million Gallon Tanks Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-5A
REVISED BY: PPW/EAH	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\8-5A MillionGallonTanks_Soil_TPH-cPAH-Naph.mxd



LEGEND

- Fill Unit
- Tidal Flat Aquitard
- 103 — Soil Total TPH in mg/kg
- 1,360/ND — Groundwater Total TPH in µg/L (Fall 2009/Spring 2010)
- Water Table (March 2010)
- (50 Ft South) — Distance and Direction of Offset from Section Line
- Screened Interval
- Total Depth

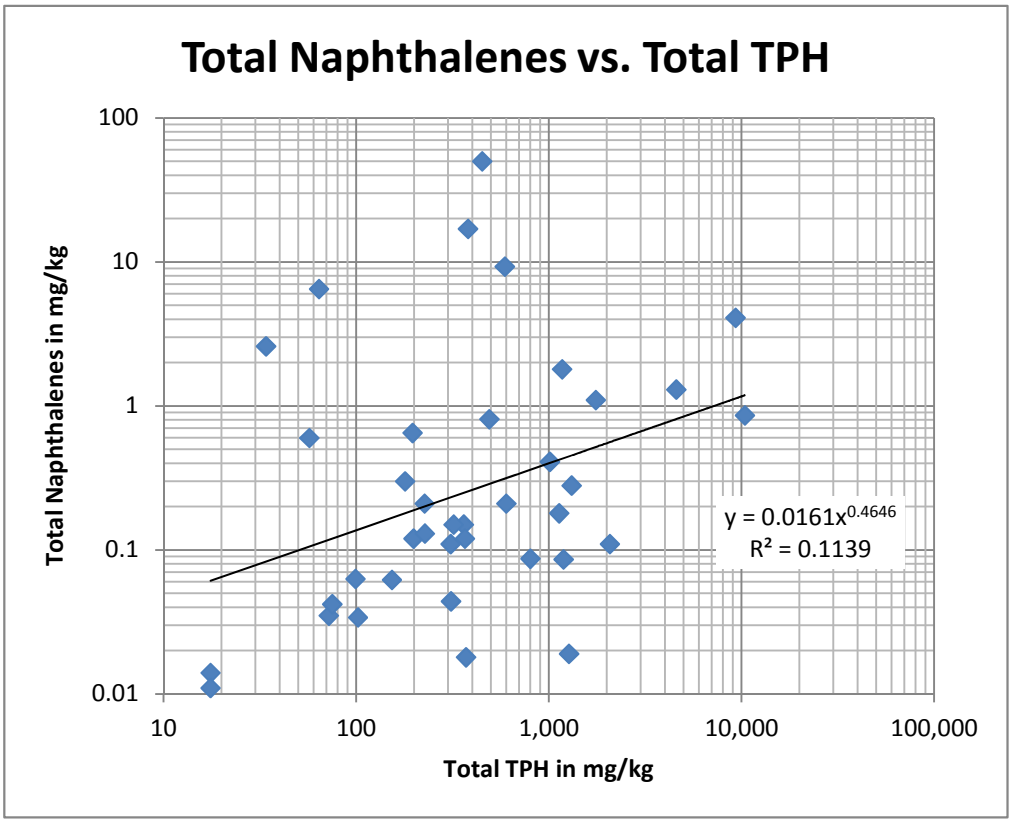
Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 5'
(10x Exaggeration)

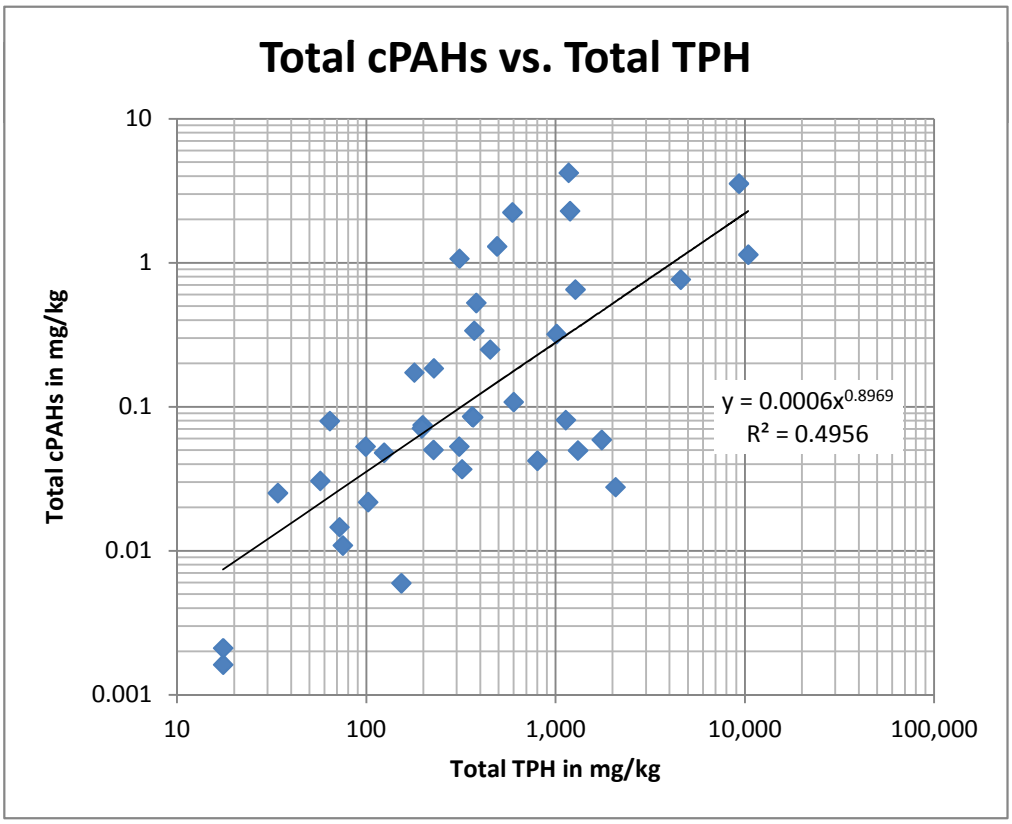
0 50 100
Feet

Cross Section MG1-MG1'
Million Gallon Tanks Subarea

GP West Site RI/FS
Bellingham, Washington

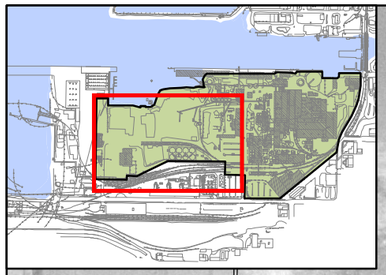
Aspect Consulting	APR-2013	BY: MAV/SCC	FIGURE NO. 7-5B
	PROJECT NO. 070188	REV BY: SCC	





Aspect Consulting
5/13/2013
C:\Data\Bham\draft RI\Figs 8-5C & 8-6D - PAH vs TPH correlation-rev.xlsx

Figure 7-5C
Correlations of PAHs and TPH in Soil, Million Gallon Tanks Subarea



MG-PW-01
TPH: 37 J (on 11/11/12)

MG-PW-01
TPH: 50 J (on 11/11/12)

EMW-20S
TPH: -- ▫ 67 J ▫ --
Naph: -- ▫ -- ▫ --
cPAH: -- ▫ -- ▫ --

EMW-8S
TPH: -- ▫ 280 J ▫ --
Naph: -- ▫ -- ▫ --
cPAH: -- ▫ -- ▫ --

EMW-7S
TPH: -- ▫ 275 J ▫ --
Naph: -- ▫ -- ▫ --
cPAH: -- ▫ -- ▫ --

CF-MW02
TPH: 1360 ▫ 58 J ▫ --
Naph: 0.028 ▫ 0.033 ▫ --
cPAH: 0.016 ▫ ND ▫ --

CF-MW01
TPH: 3300 ▫ 289 J ▫ --
Naph: 0.045 ▫ 0.062 ▫ --
cPAH: **0.0211** ▫ ND ▫ --

MG-MW03
TPH: -- ▫ ND ▫ 286 J
Naph: -- ▫ **87** ▫ **160**
cPAH: -- ▫ **0.223** ▫ **0.28**

EMW-16S
TPH: 2520 ▫ 508 ▫ 286 J
Naph: 64 ▫ 59 ▫ 42
cPAH: **2.41** ▫ **2.35** ▫ **1.01**

MG-MW01
TPH: 1360 ▫ ND ▫ 154 J
Naph: 5.4 ▫ 0.072 ▫ 0.31 U
cPAH: **0.265** ▫ **0.0644** ▫ **0.0313**

EMW-6S
TPH: 1115 ▫ ND ▫ --
Naph: 0.061 ▫ 0.16 ▫ --
cPAH: ND ▫ ND ▫ --

MG-MW04
TPH: -- ▫ -- ▫ 300 J
Naph: -- ▫ -- ▫ 15
cPAH: -- ▫ -- ▫ **0.434**

EMW-12S
TPH: 820 ▫ 78 J ▫ --
Naph: 0.022 U ▫ 0.057 ▫ --
cPAH: 0.016 ▫ ND ▫ --

EMW-18S
TPH: -- ▫ ND ▫ --
Naph: -- ▫ -- ▫ --
cPAH: -- ▫ -- ▫ --

MG-MW05
TPH: -- ▫ -- ▫ 236 J
Naph: -- ▫ -- ▫ **450**
cPAH: -- ▫ -- ▫ **1.64**

MG-MW02
TPH: -- ▫ ND ▫ --
Naph: -- ▫ 1.1 ▫ --
cPAH: -- ▫ 0.015 J ▫ --

TO STEAM PLANT

0 50 100 200 300 400 Feet

Well Location with Screening Level Exceedance

Well Location without Screening Level Exceedance

EMW-16S — *Well ID*
TPH: 2520 ▫ 508 ▫ 286 J — *Total TPHs* (in ug/L)*
Naph: 79.0 ▫ 71.0 ▫ 50.4 — *Naphthalene (in ug/L)*
cPAH: 2.41 ▫ 2.35 ▫ 1.01 — *Total cPAH TEF (in ug/L)*
2009 Result / *Q1/Q2 2010 Result* / *Q3/Q4 2010 Result*

**Total TPH is either Bunker C or the sum of detected diesel- and oil-range TPH.*
BOLD, BROWN TEXT *indicates exceedance of site groundwater screening level*
"ND" = non-detect, "--" = no sample

Intertidal Sediment Porewater Sample Locations (with Nov, 2012 TPH data)

RI sample locations are circled in black

Total cPAHs > 0.02 µg/L

Naphthalene > 83 µg/L

Million Gallon Tanks Excavation Area (RETEC, 2007)

Former Bulkhead

Oil Pipelines:

at or above ground surface

below ground surface in concrete-lined trench

below ground surface in unlined trench

MILL NORTH — TRUE NORTH (45°)

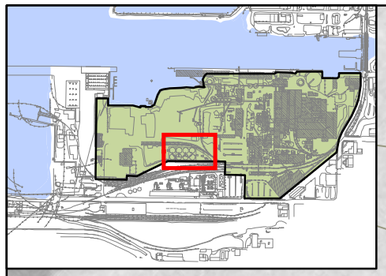
Aspect CONSULTING

2009-2012 TPH, Naphthalene, and cPAH Concentrations in Groundwater, Million Gallon Tanks Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-5D
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\DeliveredRI\Final\7-5D MillionGallonTanks_GW_TPH_cPAH_Naph.mxd



MG-VP04
AL C5-C6: 9300
AL C6-C8: 6400
AL C8-C10: 3000
AL C10-C12: 2000U
AR C8-C10: 1400U
AR C10-C12: 1600U
Naph: 300U

MG-VP03
AL C5-C6: 50U
AL C6-C8: 64U
AL C8-C10: 90U
AL C10-C12: 110U
AR C8-C10: 76U
AR C10-C12: 85U
Naph: 16U

MG-VP02
AL C5-C6: 48U
AL C6-C8: 61U
AL C8-C10: 87U
AL C10-C12: 100U
AR C8-C10: 74U
AR C10-C12: 82U
Naph: 16U

MG-VP01
AL C5-C6: 47U
AL C6-C8: 59U
AL C8-C10: 84U
AL C10-C12: 100U
AR C8-C10: 71U
AR C10-C12: 79U
Naph: 15U

Tank #1
Tank #2
Tank #3
Tank #4
Tank #5
Tank #6
Tank #7
Tank #8

TO STEAM PLANT

0 17.5 35 70 105 140 Feet

Vapor Probe Location

MG-VP01
AL C5-C6: 47U — *Sample Location ID*
AL C6-C8: 59U — *Aliphatics C5-C6 in µg/m3*
AL C8-C10: 84U — *Aliphatics C6-C8 in µg/m3*
AL C10-C12: 100U — *Aliphatics C8-C10 in µg/m3*
AR C8-C10: 71U — *Aliphatics C10-C12 in µg/m3*
AR C10-C12: 79U — *Aromatics C8-C10 in µg/m3*
Naph: 15U — *Aromatics C10-C12 in µg/m3*; *Naphthalene in µg/m3*

***BOLD, BROWN TEXT** indicates exceedance of unrestricted soil gas screening level*

Soil Gas Chemistry (color)

Location *without* exceedance of Unrestricted Soil Gas Screening Level

Location *with* exceedance of Unrestricted Soil Gas Screening Level

RI sample locations are circled in black

Million Gallon Tanks Excavation Area (RETEC, 2007)

Oil Pipelines:

at or above ground surface

below ground surface in concrete-lined trench

below ground surface in unlined trench

MILL NORTH
TRUE NORTH
45°

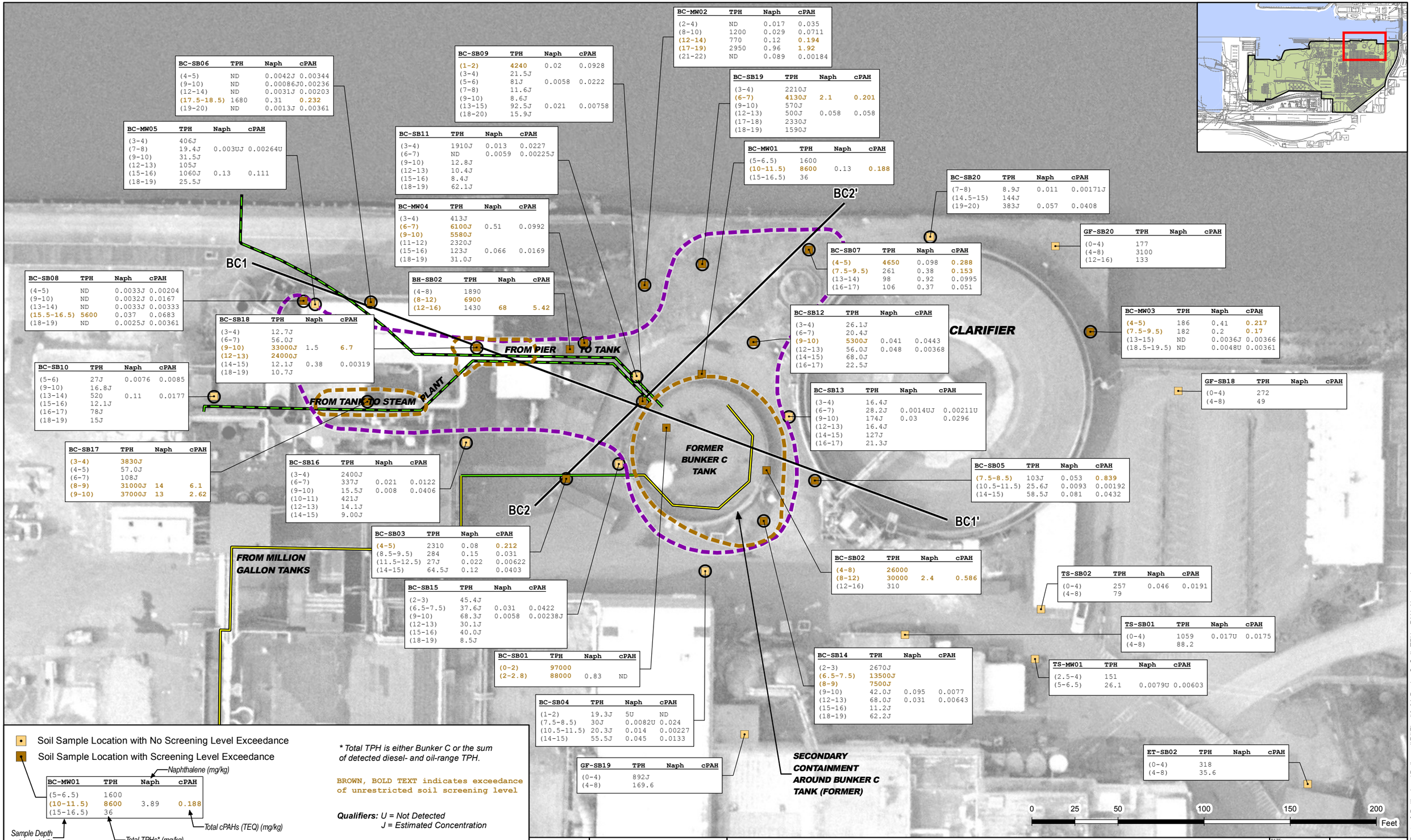
Aspect CONSULTING

Soil Vapor Petroleum Fraction and Naphthalene Data, Million Gallon Tanks Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-5E
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-5E MillionGallonTanks_PetroleumFraction_andNaph_Vapor.mxd



BC-SB06	TPH	Naph	cPAH
(4-5)	ND	0.0042J	0.00344
(9-10)	ND	0.00086J	0.00236
(12-14)	ND	0.0031J	0.00203
(17.5-18.5)	1680	0.31	0.232
(19-20)	ND	0.0013J	0.00361

BC-MW05	TPH	Naph	cPAH
(3-4)	406J		
(7-8)	19.4J	0.003UJ	0.00264U
(9-10)	31.5J		
(12-13)	105J		
(15-16)	1060J	0.13	0.111
(18-19)	25.5J		

BC-SB08	TPH	Naph	cPAH
(4-5)	ND	0.0033J	0.00204
(9-10)	ND	0.0032J	0.0167
(13-14)	ND	0.0033J	0.00333
(15.5-16.5)	5600	0.037	0.0683
(18-19)	ND	0.0025J	0.00361

BC-SB10	TPH	Naph	cPAH
(5-6)	27J	0.0076	0.0085
(9-10)	16.8J		
(13-14)	520	0.11	0.0177
(15-16)	12.1J		
(16-17)	78J		
(18-19)	15J		

BC-SB17	TPH	Naph	cPAH
(3-4)	3830J		
(4-5)	57.0J		
(6-7)	108J		
(8-9)	31000J	14	6.1
(9-10)	37000J	13	2.62

BC-SB16	TPH	Naph	cPAH
(3-4)	2400J		
(6-7)	337J	0.021	0.0122
(9-10)	15.5J	0.008	0.0406
(10-11)	421J		
(12-13)	14.1J		
(14-15)	9.00J		

BC-SB09	TPH	Naph	cPAH
(1-2)	4240	0.02	0.0928
(3-4)	21.5J		
(5-6)	81J	0.0058	0.0222
(7-8)	11.6J		
(9-10)	8.6J		
(13-15)	92.5J	0.021	0.00758
(18-20)	15.9J		

BC-SB11	TPH	Naph	cPAH
(3-4)	1910J	0.013	0.0227
(6-7)	ND	0.0059	0.00225J
(9-10)	12.8J		
(12-13)	10.4J		
(15-16)	8.4J		
(18-19)	62.1J		

BC-MW04	TPH	Naph	cPAH
(3-4)	413J		
(6-7)	6100J	0.51	0.0992
(9-10)	5580J		
(11-12)	2320J		
(15-16)	123J	0.066	0.0169
(18-19)	31.0J		

BH-SB02	TPH	Naph	cPAH
(4-8)	1890		
(8-12)	6900		
(12-16)	1430	68	5.42

BC-SB18	TPH	Naph	cPAH
(3-4)	12.7J		
(6-7)	56.0J		
(9-10)	33000J	1.5	6.7
(12-13)	24000J		
(14-15)	12.1J	0.38	0.00319
(18-19)	10.7J		

BC-SB03	TPH	Naph	cPAH
(4-5)	2310	0.08	0.212
(8.5-9.5)	284	0.15	0.031
(11.5-12.5)	27J	0.022	0.00622
(14-15)	64.5J	0.12	0.0403

BC-SB15	TPH	Naph	cPAH
(2-3)	45.4J		
(6.5-7.5)	37.6J	0.031	0.0422
(9-10)	68.3J	0.0058	0.00238J
(12-13)	30.1J		
(15-16)	40.0J		
(18-19)	8.5J		

BC-SB01	TPH	Naph	cPAH
(0-2)	97000		
(2-2.8)	88000	0.83	ND

BC-SB04	TPH	Naph	cPAH
(1-2)	19.3J	5U	ND
(7.5-8.5)	30J	0.0082U	0.024
(10.5-11.5)	20.3J	0.014	0.00227
(14-15)	55.5J	0.045	0.0133

GF-SB19	TPH	Naph	cPAH
(0-4)	892J		
(4-8)	169.6		

BC-MW02	TPH	Naph	cPAH
(2-4)	ND	0.017	0.035
(8-10)	1200	0.029	0.0711
(12-14)	770	0.12	0.194
(17-19)	2950	0.96	1.92
(21-22)	ND	0.089	0.00184

BC-SB19	TPH	Naph	cPAH
(3-4)	2210J		
(6-7)	4130J	2.1	0.201
(9-10)	570J		
(12-13)	500J	0.058	0.058
(17-18)	2330J		
(18-19)	1590J		

BC-MW01	TPH	Naph	cPAH
(5-6.5)	1600		
(10-11.5)	8600	0.13	0.188
(15-16.5)	36		

BC-SB20	TPH	Naph	cPAH
(7-8)	8.9J	0.011	0.00171J
(14.5-15)	144J		
(19-20)	383J	0.057	0.0408

GF-SB20	TPH	Naph	cPAH
(0-4)	177		
(4-8)	3100		
(12-16)	133		

BC-SB07	TPH	Naph	cPAH
(4-5)	4650	0.098	0.288
(7.5-9.5)	261	0.38	0.153
(13-14)	98	0.92	0.0995
(16-17)	106	0.37	0.051

BC-SB12	TPH	Naph	cPAH
(3-4)	26.1J		
(6-7)	20.4J		
(9-10)	5300J	0.041	0.0443
(12-13)	56.0J	0.048	0.00368
(14-15)	68.0J		
(16-17)	22.5J		

BC-MW03	TPH	Naph	cPAH
(4-5)	186	0.41	0.217
(7.5-9.5)	182	0.2	0.17
(13-15)	ND	0.0036J	0.00366
(18.5-19.5)	ND	0.0048U	0.00361

GF-SB18	TPH	Naph	cPAH
(0-4)	272		
(4-8)	49		

BC-SB13	TPH	Naph	cPAH
(3-4)	16.4J		
(6-7)	28.2J	0.0014UJ	0.00211U
(9-10)	174J	0.03	0.0296
(12-13)	16.4J		
(14-15)	127J		
(16-17)	21.3J		

BC-SB05	TPH	Naph	cPAH
(7.5-8.5)	103J	0.053	0.839
(10.5-11.5)	25.6J	0.0093	0.00192
(14-15)	58.5J	0.081	0.0432

BC-SB02	TPH	Naph	cPAH
(4-8)	26000		
(8-12)	30000	2.4	0.586
(12-16)	310		

TS-SB02	TPH	Naph	cPAH
(0-4)	257	0.046	0.0191
(4-8)	79		

TS-SB01	TPH	Naph	cPAH
(0-4)	1059	0.017U	0.0175
(4-8)	88.2		

BC-SB14	TPH	Naph	cPAH
(2-3)	2670J		
(6.5-7.5)	13500J		
(8-9)	7500J		
(9-10)	42.0J	0.095	0.0077
(12-13)	68.0J	0.031	0.00643
(15-16)	11.2J		
(18-19)	62.2J		

TS-MW01	TPH	Naph	cPAH
(2.5-4)	151		
(5-6.5)	26.1	0.0079U	0.00603

ET-SB02	TPH	Naph	cPAH
(0-4)	318		
(4-8)	35.6		

Soil Sample Location with No Screening Level Exceedance

Soil Sample Location with Screening Level Exceedance

BC-MW01	TPH	Naph	cPAH
(5-6.5)	1600		
(10-11.5)	8600	3.89	0.188
(15-16.5)	36		

Naphthalene (mg/kg)
Total cPAHs (TEQ) (mg/kg)
Sample Depth Intervals (ft)
Total TPHs* (mg/kg)

Soil TPH > 3100 mg/kg

Soil TPH > 10,000 mg/kg

Cross Sections

RI sample locations are circled in black

** Total TPH is either Bunker C or the sum of detected diesel- and oil-range TPH.*

BROWN, BOLD TEXT indicates exceedance of unrestricted soil screening level

Qualifiers: *U = Not Detected*
J = Estimated Concentration

Oil Pipelines:

- at or above ground surface
- below ground surface in concrete-lined trench
- below ground surface in unlined trench

MILL NORTH
TRUE NORTH
45°

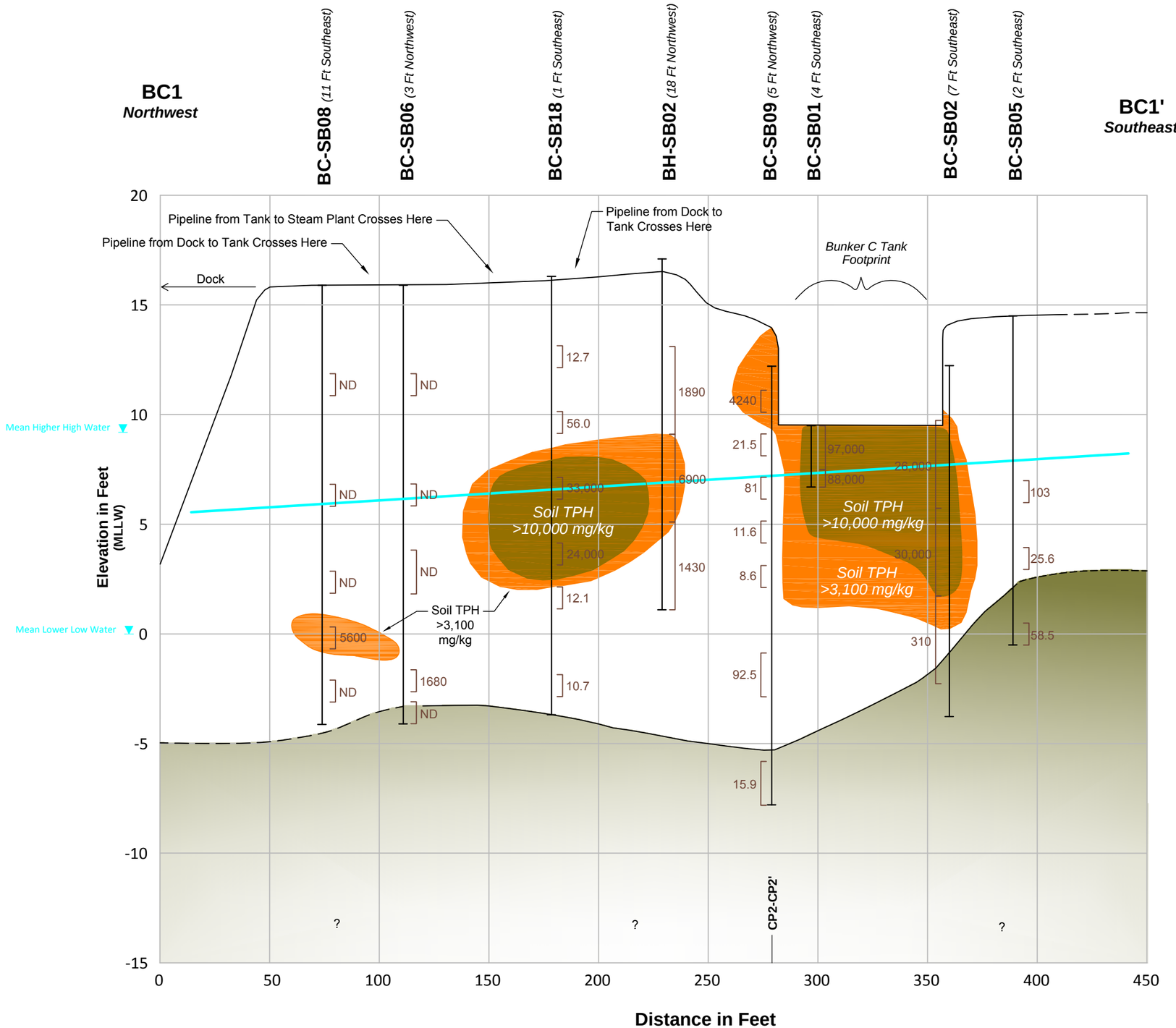
Aspect CONSULTING

TPH, Naphthalene, and cPAH Concentrations in Soil, Bunker C Tank Subarea

GP West Site RI/FS - Bellingham, WA

DATE:	PROJECT NO.
Apr 2013	070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-6A
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\8-6A BunkerC_Soil_TPH_cPAH_Naph.mxd



LEGEND

- Fill Unit-Sand
- Glaciomarine Drift
- 103 — Soil Total TPH in mg/kg
- ND — Non Detected TPH
- Water Table (March 2010)
- (17 Ft South) — Distance and Direction of Offset from Section Line
- Total Depth

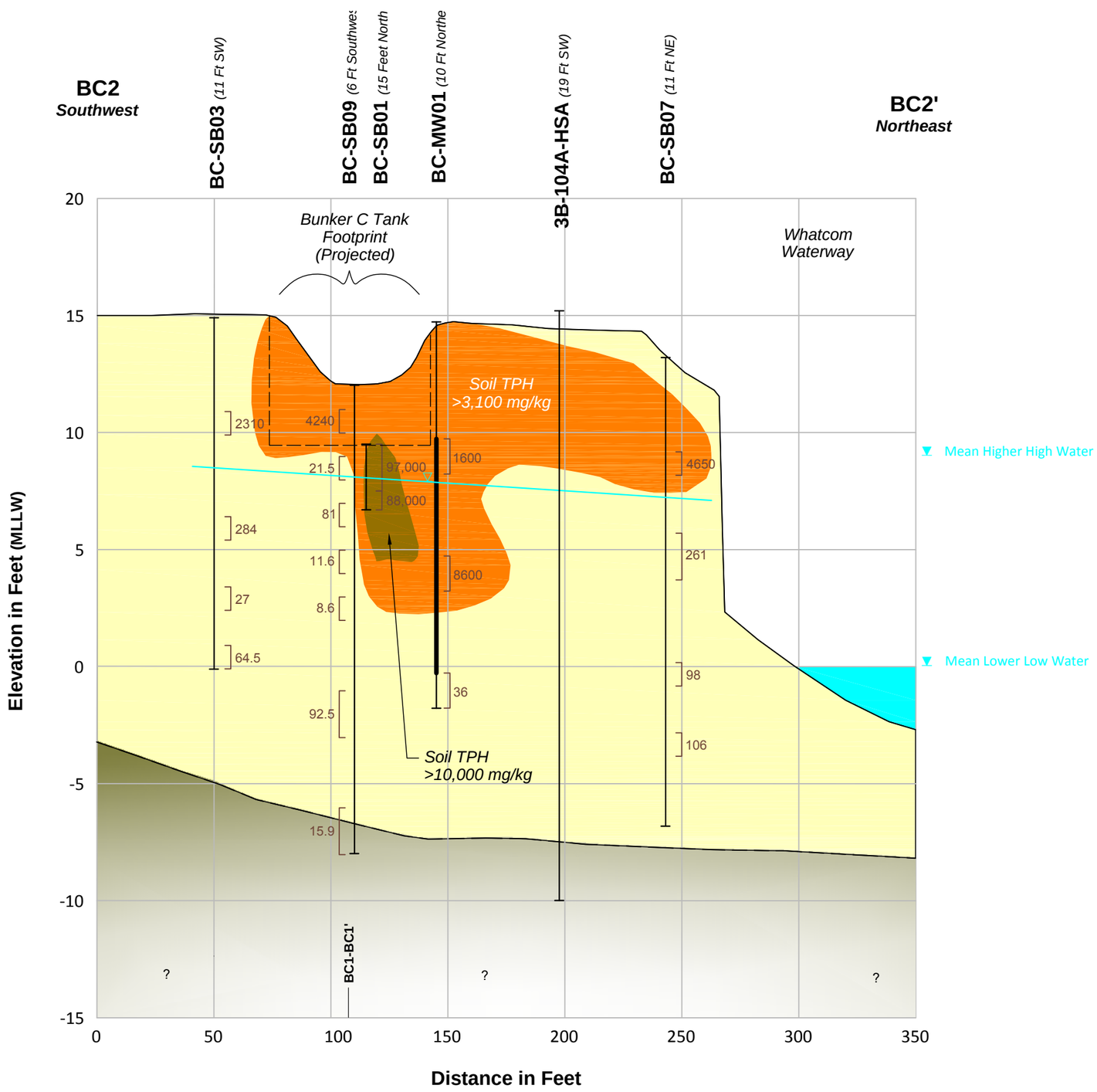
Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 5'
(10x Exaggeration)

0 50 100
Feet

Cross Section BC1-BC1'
Bunker C Tank Subarea

GP West Site RI/FS
Bellingham, Washington

Aspect Consulting	APRI-2013	BY: MAV/SCC	FIGURE NO. 7-6B
	PROJECT NO. 070188	REV BY: SCC	



LEGEND

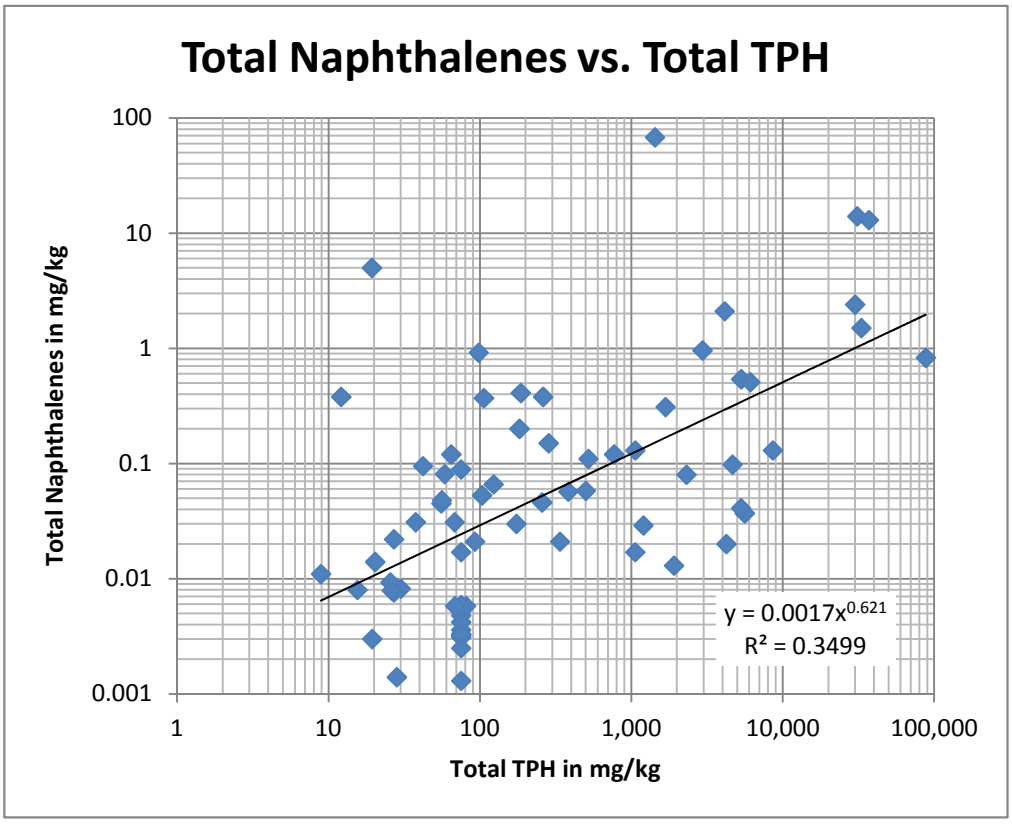
- Fill Unit
- Glaciomarine Drift
- 103 Soil Total TPH in mg/kg
- Water Table (March 2010)
- (50 Ft South) Distance and Direction of Offset from Section Line
- Screened Interval
- Total Depth

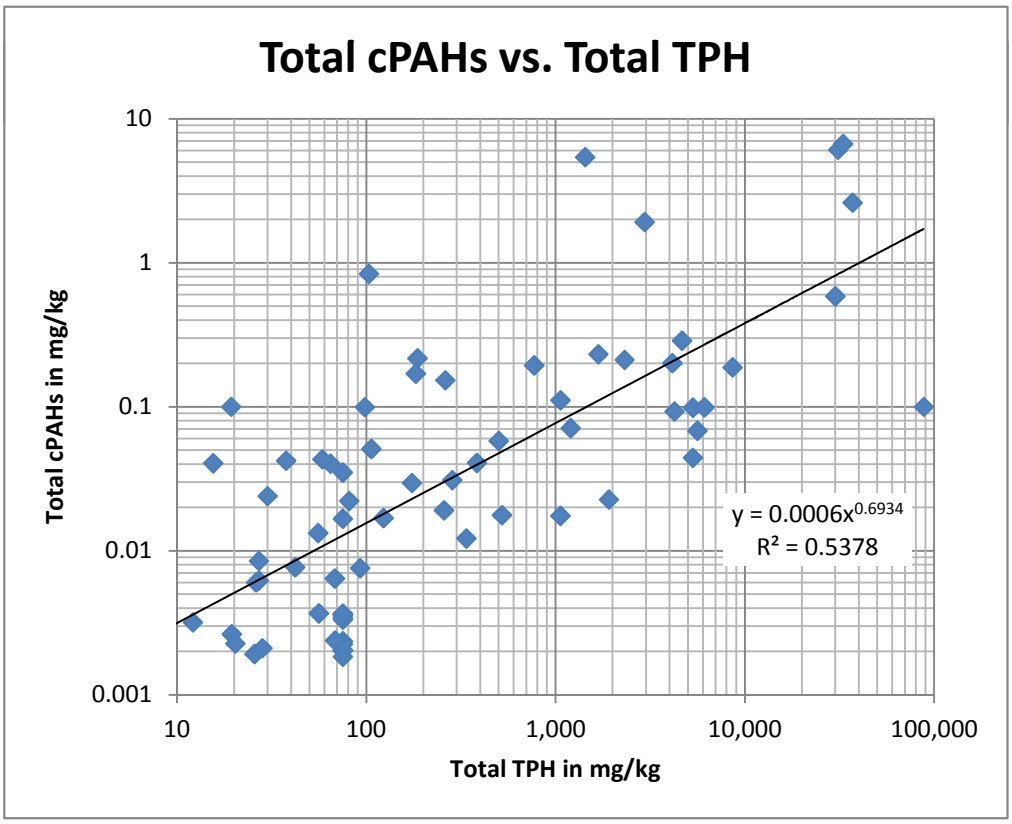
Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 5'
(10x Exaggeration)

0 50 100
Feet

Cross Section BC2-BC2'
Bunker C Tank Subarea
GP West Site RI/FS
Bellingham, Washington

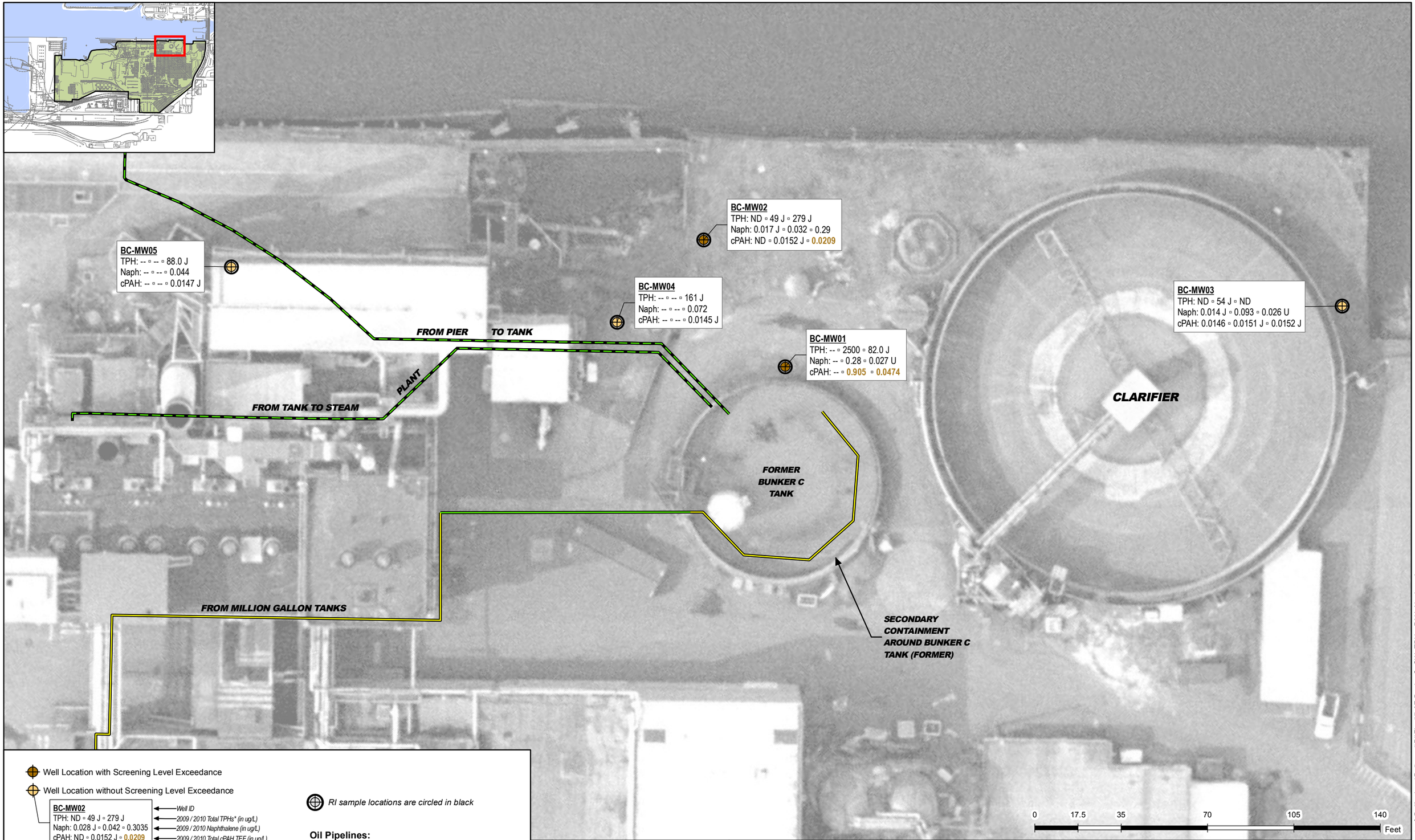
Aspect Consulting	APR-2013	BY: MAV/SCC	FIGURE NO. 7-6C
	PROJECT NO. 070188	REV BY: SCC	





Aspect Consulting
5/13/2013
C:\Data\Bham\draft RI\Figs 8-5C & 8-6D - PAH vs TPH correlation-rev.xlsx

Figure 7-6D
Correlations of PAHs and TPH in Soil, Bunker C Tank Subarea



Well Location with Screening Level Exceedance

Well Location without Screening Level Exceedance

BC-MW02
TPH: ND ▫ 49 J ▫ 279 J
Naph: 0.028 J ▫ 0.042 ▫ 0.3035
cPAH: ND ▫ 0.0152 J ▫ 0.0209

- BC-MW02 — Well ID
- TPH: ND ▫ 49 J ▫ 279 J — 2009 / 2010 Total TPHs* (in ug/L)
- Naph: 0.028 J ▫ 0.042 ▫ 0.3035 — 2009 / 2010 Naphthalene (in ug/L)
- cPAH: ND ▫ 0.0152 J ▫ 0.0209 — 2009 / 2010 Total cPAH TEF (in ug/L)
- 2009 Result
- Q1/Q2 2010 Result
- Q3/Q4 2010 Result

*Total TPH is either Bunker C or the sum of detected diesel- and oil-range TPH.
BOLD, BROWN TEXT indicates exceedance of site groundwater screening level
"ND" = non-detect, "--" = no sample

RI sample locations are circled in black

Oil Pipelines:
- at or above ground surface
- below ground surface in concrete-lined trench
- below ground surface in unlined trench

MILL NORTH
TRUE NORTH
45°

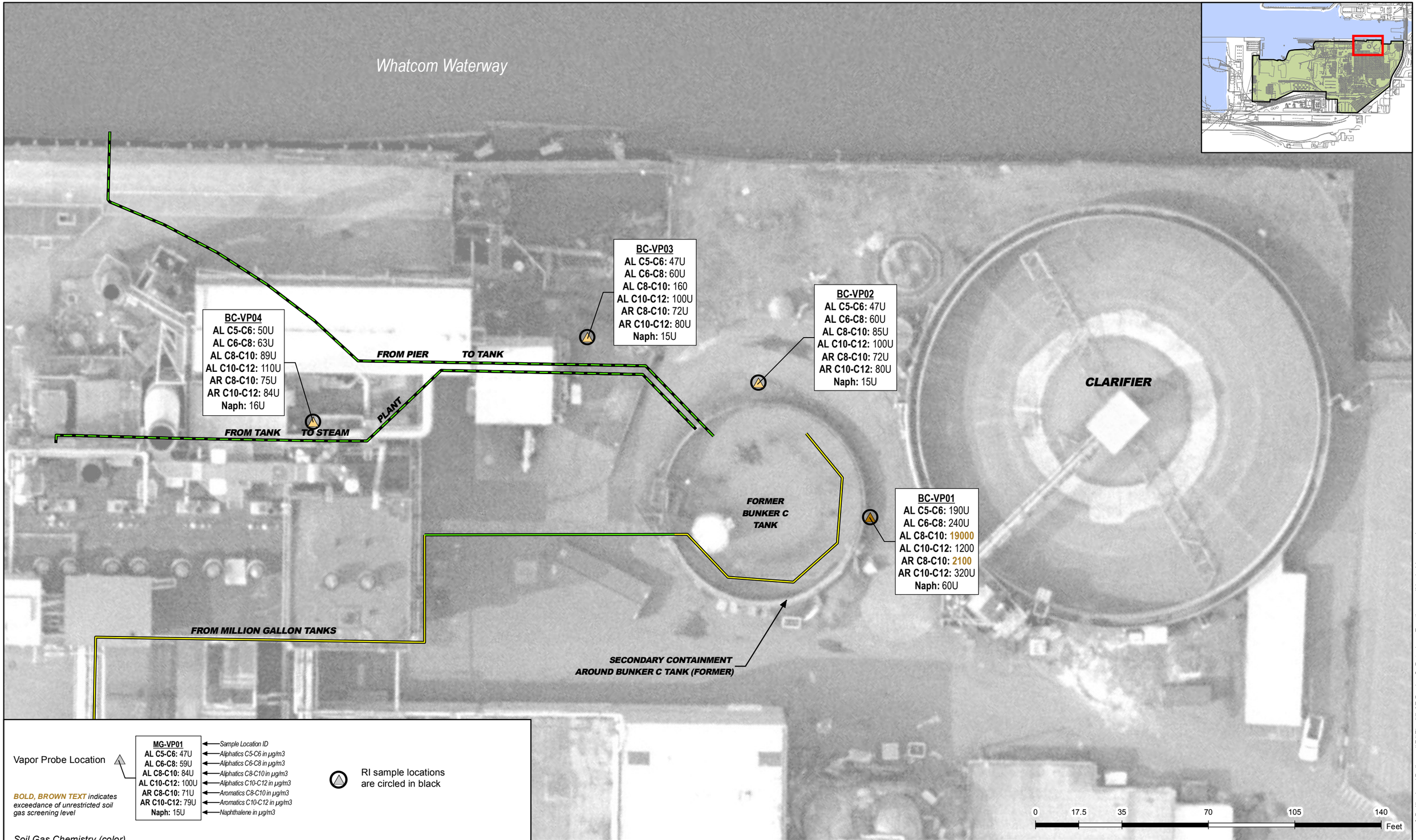
Aspect CONSULTING

2009-2010 TPH, Naphthalene, and cPAH Concentrations in Groundwater, Bunker C Tank Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-6E
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-6E BunkerC_GW_TPH_cPAH_Naph.mxd



Vapor Probe Location

MG-VP01
AL C5-C6: 47U — *Aliphatics C5-C6 in µg/m3*
AL C6-C8: 59U — *Aliphatics C6-C8 in µg/m3*
AL C8-C10: 84U — *Aliphatics C8-C10 in µg/m3*
AL C10-C12: 100U — *Aliphatics C10-C12 in µg/m3*
AR C8-C10: 71U — *Aromatics C8-C10 in µg/m3*
AR C10-C12: 79U — *Aromatics C10-C12 in µg/m3*
Naph: 15U — *Naphthalene in µg/m3*

BOLD, BROWN TEXT *indicates exceedance of unrestricted soil gas screening level*

RI sample locations are circled in black

Soil Gas Chemistry (color)

- Location *without* exceedance of Unrestricted Soil Gas Screening Level
- Location *with* exceedance of Unrestricted Soil Gas Screening Level

Oil Pipelines:

- at or above ground surface
- below ground surface in concrete-lined trench
- below ground surface in unlined trench

MILL NORTH / TRUE NORTH (45°)

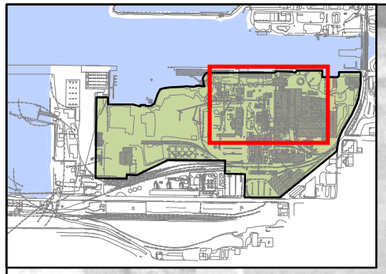
Aspect CONSULTING

Soil Vapor Petroleum Fraction and Naphthalene Concentrations, Bunker C Tank Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-6F
REVISED BY: ---	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-6F BunkerC_PetroleumFraction_andNaph_Vapor.mxd



GF-MW01	2009 Data	2010 Data
Arsenic	4.77	1.67U
Cadmium	0.842	0.012U
Chromium (Total)	3.2	1.27
Chromium (VI)	5J	36J
Copper	0.61	0.121J
Lead	0.04U	0.1U
Mercury	0.001U	0.00014J
Nickel	2.42	1.67U
Zinc	3.73	0.32U
pH	6.63	6.54

AA-MW01	2009 Data	2010 Data
Arsenic	0.11J	0.3U
Cadmium	0.02U	0.02U
Chromium (Total)	0.38	0.42
Chromium (VI)	18J	50U
Copper	0.3	0.58
Lead	0.02U	0.05
Mercury	0.001U	0.00024J
Nickel	0.84	1.62
Zinc	0.5U	0.5U
pH	7.56	6.92

BC-MW02	2009 Data	2010 Data
Arsenic		0.66U
Cadmium		0.012U
Chromium (Total)		3.03
Chromium (VI)	50U	50U
Copper		0.232J
Lead		0.045U
Mercury	0.001U	0.00058J
Nickel		0.1J
Zinc		1.18U
pH	6.56	6.69

BC-MW03	2009 Data	2010 Data
Arsenic		0.15U
Cadmium		0.014U
Chromium (Total)		1.66
Chromium (VI)		50U
Copper		0.14J
Lead		0.1U
Mercury		0.00021J
Nickel		1.67U
Zinc		0.47U
pH	7.79	7.95

BC-MW01	2009 Data	2010 Data
Arsenic		1.5J
Cadmium		0.04
Chromium (Total)		1.29
Chromium (VI)		50U
Copper		2.4
Lead		0.123
Mercury		0.00175
Nickel		3.72
Zinc		0.9J
pH		6.82

FH-MW01	2009 Data	2010 Data
Arsenic	2.72	0.5U
Cadmium	0.039U	0.443
Chromium (Total)	8.66	8.26
Chromium (VI)	50U	50U
Copper	1.55	1.55
Lead	0.078	0.058
Mercury	0.00134U	0.00032J
Nickel	**209**	**459**
Zinc	**616**	**1130**
pH	4.36	4.64

TS-MW01	2009 Data	2010 Data
Arsenic	0.69	0.5U
Cadmium	0.005J	0.02U
Chromium (Total)	1.98	0.78
Chromium (VI)	50U	50U
Copper	0.42	0.57
Lead	0.02U	0.028
Mercury	0.00108	0.0009J
Nickel	0.5	2.37
Zinc	0.25J	0.3U
pH	7.35	7.31

AA-MW03	2009 Data	2010 Data
Arsenic	0.87	0.4U
Cadmium	0.02U	0.09
Chromium (Total)	12.4	12.4
Chromium (VI)	50U	50U
Copper	0.99	1.09
Lead	0.02U	0.085
Mercury	0.001U	0.00086J
Nickel	3.01	7.37
Zinc	32.3	23.6
pH	5.06	4.87

AA-MW02	2009 Data	2010 Data
Arsenic	0.1J	0.2U
Cadmium	0.02U	0.02U
Chromium (Total)	5.04	3.37
Chromium (VI)	50U	50U
Copper	0.67	0.68
Lead	0.02U	0.027
Mercury	0.001U	0.00029J
Nickel	2.18	2.3
Zinc	0.4J	0.6J
pH	7.23	7.24

AA-MW04	2009 Data	2010 Data
Arsenic	4.73	**48**
Cadmium	**1650**	**74.3**
Chromium (Total)	19.4	6.96
Chromium (VI)	6J	50U
Copper	2.78	**179**
Lead	0.555	0.426
Mercury	0.0018	0.00342
Nickel	**1560**	**108**
Zinc	**7420**	**836**
pH	4.18	4.49

AA-MW04 2009 Soil Metals Data (concentrations in mg/kg)

Sample Depth Interval (ft)	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
1 to 2	**24.2**	**1.65**	25.4	**82.4**	18100	**718**	126	**1.1**	12	54.4
4 to 5	2.2 U	0.61	21.8	25.4	7050	5.3	107	0.061	6.49	14.9
8.5 to 9.5	**10.1**	**1.35**	21.4	**603**	12400	6.2	114	**0.58**	11.6	17.5
11 to 12	4	**5.13**	26.8	10.9	13000	1.6 J	179	0.015 J	27.3	56

LB-MW01	2009 Data	2010 Data
Arsenic	0.45U	0.4U
Cadmium	0.013U	0.02U
Chromium (Total)	14.5	2.83
Chromium (VI)	50U	50U
Copper	1.4	0.79
Lead	0.112	0.053
Mercury	0.00934	0.00065J
Nickel	0.86	2
Zinc	0.72	0.6J
pH	6.79	6.84

Extent of Dissolved Metals Exceedances

Monitoring Wells

No groundwater metals exceedances in 2009 or 2010

One or more groundwater metals exceedances in 2009 or 2010

Location ID	2004 Data	2009 Data
Analyte	Conc. in ug/L (except pH)	

BROWN, BOLD TEXT indicates exceedance of Site Groundwater Screening Level

Qualifiers: *U = Not Detected, J = Estimated Concentration*

RI sample locations are circled in black

Barking and Chipping Plant
City of Bellingham Storm Drain
Steam Plant
Bunker C Tank
Clarifier
Truck Shop
Fuel House
Chip Dump
Maintenance Facilities
Electrical Substation
Acid Plant
Pulp and Tissue Plant
Lab

0 37.5 75 150 225 300 Feet

MILL NORTH — TRUE NORTH 45°

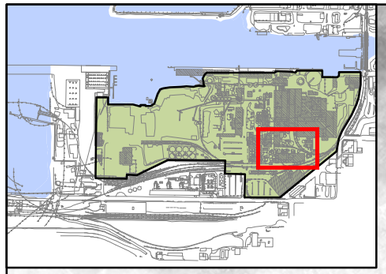
Aspect CONSULTING

2009-2010 Metals Concentrations in Soil and Groundwater, Acid Plant Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013
DESIGNED BY: SJG
DRAWN BY: PPW
REVISED BY: PPW
PROJECT NO. 070188
FIGURE NO. 7-7A

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-7A AcidArea_MetalsExceed_andSoil.mxd



LP-SB12
09/15/2009
PCE: 0.5 U
TCE: 0.5 U
DCE: 0.5 U
VC: 0.5 U

LP-SB13
09/15/2009
PCE: 0.5 U
TCE: 0.5 U
DCE: 0.5 U
VC: 0.5 U

LP-SB14
09/15/2009
PCE: 0.5 U
TCE: 0.12 J
DCE: 0.33 J
VC: 0.5 U

LP-SB11
09/15/2009
PCE: 0.5 U
TCE: 0.11 J
DCE: 0.5 U
VC: 0.5 U

LP-SB09
09/15/2009
PCE: 0.5 U
TCE: 0.5 U
DCE: 0.5 U
VC: 0.09 J

LP-MW01
09/01/2009
PCE: 1.9
TCE: 1.2
DCE: 5.7
*VC: **10 J***

03/29/2010
*PCE: **6.5***
TCE: 0.33 J
DCE: 0.27 J
VC: 0.11 J

LP-SB10
09/15/2009
PCE: 0.5 U
TCE: 0.5 U
DCE: 0.5 U
VC: 0.5 U

LP-MW02

0 20 40 80 120 160 Feet

Exploration Type:

- Monitoring Well
- Soil Boring

Groundwater Data Labels:

Location ID
Sample Date
PCE Concentration in ug/L
TCE Concentration in ug/L
DCE Concentration in ug/L
VC Concentration in ug/L

RI sample locations are circled in black

Exceedance of Site Groundwater VOC Screening Level at Given Location:

- Yes
- No

BROWN TEXT indicates exceedance of Industrial Site Screening Level

BLUE TEXT indicates exceedance of Unrestricted Site Screening Level

Qualifiers: *U = Not Detected*
J = Estimated Concentration

MILL NORTH
TRUE NORTH

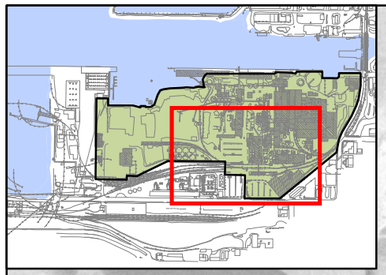
Aspect CONSULTING

2009-2010 VOC Groundwater Exceedances, Lignin Plant LP-MW01 Subarea

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: PPW	
DRAWN BY: PPW	FIGURE NO. 7-8A
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-8A LigninPlant_VOCs.mxd



Chip Dump

Maintenance Facilities

Electrical Substation

Acid Plant

Pulp and Tissue Plant

Chemfix Area

EMW-16S	2009 Data	2010 Data
Arsenic	**15.7**	0.17U
Cadmium	0.266	0.067U
Chromium (Total)	2690	3.9
Chromium (VI)	50U	50U
Copper	**11.1**	0.042U
Lead	0.462	0.1U
Mercury	0.0628	0.109
Nickel	**23.9**	1.67U
Zinc	11.1	1.67U
pH	6.73	6.66

EMW-12S	2009 Data	2010 Data
Arsenic	**7.53**	4.1
Cadmium	0.028	0.009J
Chromium (Total)	329	98.4
Chromium (VI)	50U	5J
Copper	1.73	1.34
Lead	0.227	0.211
Mercury	0.00268J	0.00286
Nickel	2.35	2.63
Zinc	1.17	1J
pH	6.67	6.84

SC-MW02	2009 Data	2010 Data
Arsenic	2.94	1.67U
Cadmium	0.043	0.067U
Chromium (Total)	6410	235
Chromium (VI)	50U	50U
Copper	**4.78**	0.412
Lead	0.202	0.042U
Mercury	0.00242J	0.0058
Nickel	**8.42**	1.67U
Zinc	4.13	0.37U
pH	6.41	6.56

Lab

LP-MW01	2009 Data	2010 Data
Arsenic	3.18	1.1J
Cadmium	0.097	0.061
Chromium (Total)	158	71.1
Chromium (VI)	12J	48J
Copper	3.1	**4.41**
Lead	0.128	0.097
Mercury	0.0421	0.03
Nickel	1.61	1.2
Zinc	0.56	0.5U
pH	7.09	7.79

Lignin Plant

Million Gallon Tanks

Alcohol Plant

LW-MW01	2009 Data	2010 Data
Arsenic	3.95	2.3
Cadmium	0.074	0.047
Chromium (Total)	633	792
Chromium (VI)	50U	50U
Copper	3.08	2.99
Lead	0.132	0.133
Mercury	0.00197	0.00225
Nickel	5.53	5.11
Zinc	4.4	3.3
pH	8.4	8.94

Lignin Warehouse B

0 50 100 200 300 400 Feet

Monitoring Wells

No groundwater metals exceedances in 2009 or 2010

One or more groundwater metals exceedances in 2009 or 2010

Location ID	2004 Data	2009 Data
Analyte	Conc. in ug/L (except pH)	

BROWN, BOLD TEXT indicates exceedance of Site Groundwater Screening Level

Qualifiers: *U = Not Detected, J = Estimated Concentration*

RI sample locations are circled in black

MILL NORTH — TRUE NORTH (45°)

Aspect CONSULTING

2009 - 2010 Miscellaneous Groundwater Metals Exceedances

GP West Site RI/FS - Bellingham, WA

DATE:	PROJECT NO.
Apr 2013	070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-9A
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-9A Misc_MetalsExceeds.mxd

Site-Wide Soil Dioxin/Furan Data:

Chemical Name	CP-MW03 (4-5 ft) 9/16/09 RI	PR-MW01 (5-6 ft) 9/14/09 RI	BC-SB05 (0.5-1.5 ft) 9/22/09 RI	BH-SB01 (0-4 ft) 7/16/04 Pre-RI
Dioxins/Furans				
2,3,7,8-TCDD in mg/kg	9.44E-07 U	1.08E-06 J	8.92E-07 U	2.00E-07 U
1,2,3,7,8-PeCDD in mg/kg	2.36E-06 U	2.38E-06 J	3.00E-07 J	9.70E-07 U
1,2,3,4,7,8-HxCDD in mg/kg	2.36E-06 U	2.01E-06 J	7.03E-07 J	2.00E-06 U
1,2,3,6,7,8-HxCDD in mg/kg	1.26E-06 J	8.00E-06	2.10E-06 J	3.30E-06 J
1,2,3,7,8,9-HxCDD in mg/kg	5.85E-07 J	5.21E-06	1.56E-06 J	2.40E-06 U
1,2,3,4,6,7,8-HpCDD in mg/kg	1.21E-05 J	1.84E-04	4.67E-05	3.50E-05
OCDD in mg/kg	1.04E-04 J	1.93E-03 J	3.20E-04 J	1.20E-04
2,3,7,8-TCDF in mg/kg	5.65E-06 J	2.48E-05	8.92E-07 U	1.00E-06 J
1,2,3,7,8-PeCDF in mg/kg	8.68E-06 J	1.43E-05	2.23E-06 U	5.20E-07 U
2,3,4,7,8-PeCDF in mg/kg	3.34E-06	9.96E-06 J	2.23E-06 U	6.10E-07 U
1,2,3,4,7,8-HxCDF in mg/kg	1.29E-05 J	7.95E-05	4.29E-07 J	1.10E-06 U
1,2,3,6,7,8-HxCDF in mg/kg	3.45E-06 J	1.64E-05 J	2.41E-07 J	4.50E-07 U
1,2,3,7,8,9-HxCDF in mg/kg	2.36E-06 J	3.02E-06 U	2.23E-06 U	1.10E-07 U
2,3,4,6,7,8-HxCDF in mg/kg	1.44E-06 J	3.09E-06	2.23E-06 U	3.60E-07 U
1,2,3,4,6,7,8-HpCDF in mg/kg	6.26E-06	7.54E-05 J	2.81E-06	9.60E-06
1,2,3,4,7,8,9-HpCDF in mg/kg	3.64E-06	2.09E-05	2.23E-06 U	3.50E-07 U
OCDF in mg/kg	2.23E-05 J	1.70E-04	6.01E-06 J	8.00E-06 J
Total 2,3,7,8 TCDD (TEF) in mg/kg	5.94E-06	**2.44E-05**	2.49E-06	1.92E-06

Chemical Name	BH-SB01 (4-8 ft) 7/16/04 Pre-RI	BH-SB02 (0-4 ft) 7/21/04 Pre-RI	BH-SB02 (4-8 ft) 7/21/04 Pre-RI	BH-SB02 FD (4-8 ft) 7/21/04 Pre-RI
Dioxins/Furans				
2,3,7,8-TCDD in mg/kg	4.80E-08 U	9.30E-07 U	2.20E-06	2.30E-06
1,2,3,7,8-PeCDD in mg/kg	7.30E-08 U	2.40E-06 U	2.50E-04	3.30E-04
1,2,3,4,7,8-HxCDD in mg/kg	9.00E-08 U	9.30E-06	1.60E-03	2.50E-03
1,2,3,6,7,8-HxCDD in mg/kg	1.10E-07 U	3.40E-05	1.10E-03	1.90E-03
1,2,3,7,8,9-HxCDD in mg/kg	1.10E-07 U	1.20E-05	8.30E-04	1.80E-03
1,2,3,4,6,7,8-HpCDD in mg/kg	6.20E-07 U	8.30E-04	7.50E-03	1.30E-02
OCDD in mg/kg	3.00E-06 U	1.10E-02	6.60E-03	8.60E-03
2,3,7,8-TCDF in mg/kg	4.40E-07 U	1.30E-06	5.20E-05	6.40E-05
1,2,3,7,8-PeCDF in mg/kg	8.30E-08 U	1.20E-06 U	4.60E-05	5.70E-05
2,3,4,7,8-PeCDF in mg/kg	8.40E-08 U	1.30E-06 U	5.20E-05	6.00E-05
1,2,3,4,7,8-HxCDF in mg/kg	1.20E-07 U	8.30E-06	7.20E-05	8.90E-05
1,2,3,6,7,8-HxCDF in mg/kg	4.00E-08 U	3.70E-06 J	3.80E-05	4.00E-05
1,2,3,7,8,9-HxCDF in mg/kg	4.40E-08 U	1.00E-06 U	2.90E-06 U	4.80E-06 J
2,3,4,6,7,8-HxCDF in mg/kg	4.30E-08 U	2.80E-06 J	2.30E-05	2.90E-05
1,2,3,4,6,7,8-HpCDF in mg/kg	1.30E-07 U	1.40E-04	1.70E-04	1.40E-04
1,2,3,4,7,8,9-HpCDF in mg/kg	4.80E-08 U	8.10E-06	1.90E-05	1.60E-05
OCDF in mg/kg	1.30E-07 U	8.30E-04	4.10E-04	3.70E-04
Total 2,3,7,8 TCDD (TEF) in mg/kg	1.30E-07	**2.24E-05**	**7.20E-04**	**1.13E-03**

Notes

Concentrations in shaded cells with bold text indicate value exceeds Unrestricted Soil Screening Level of 0.000011 mg/kg

J - Analyte was positively identified. The reported result is an estimate.

U - Analyte was not detected at or above the reported result.

BH-SB01 Location and ID of Exploration w/ No Dioxin Furan Exceedance

BH-SB02 Location and ID of Exploration w/ Dioxin/Furan Exceedance

RI sample locations are circled in blue

0 125 250 500 Feet

MILL NORTH — TRUE NORTH 45°

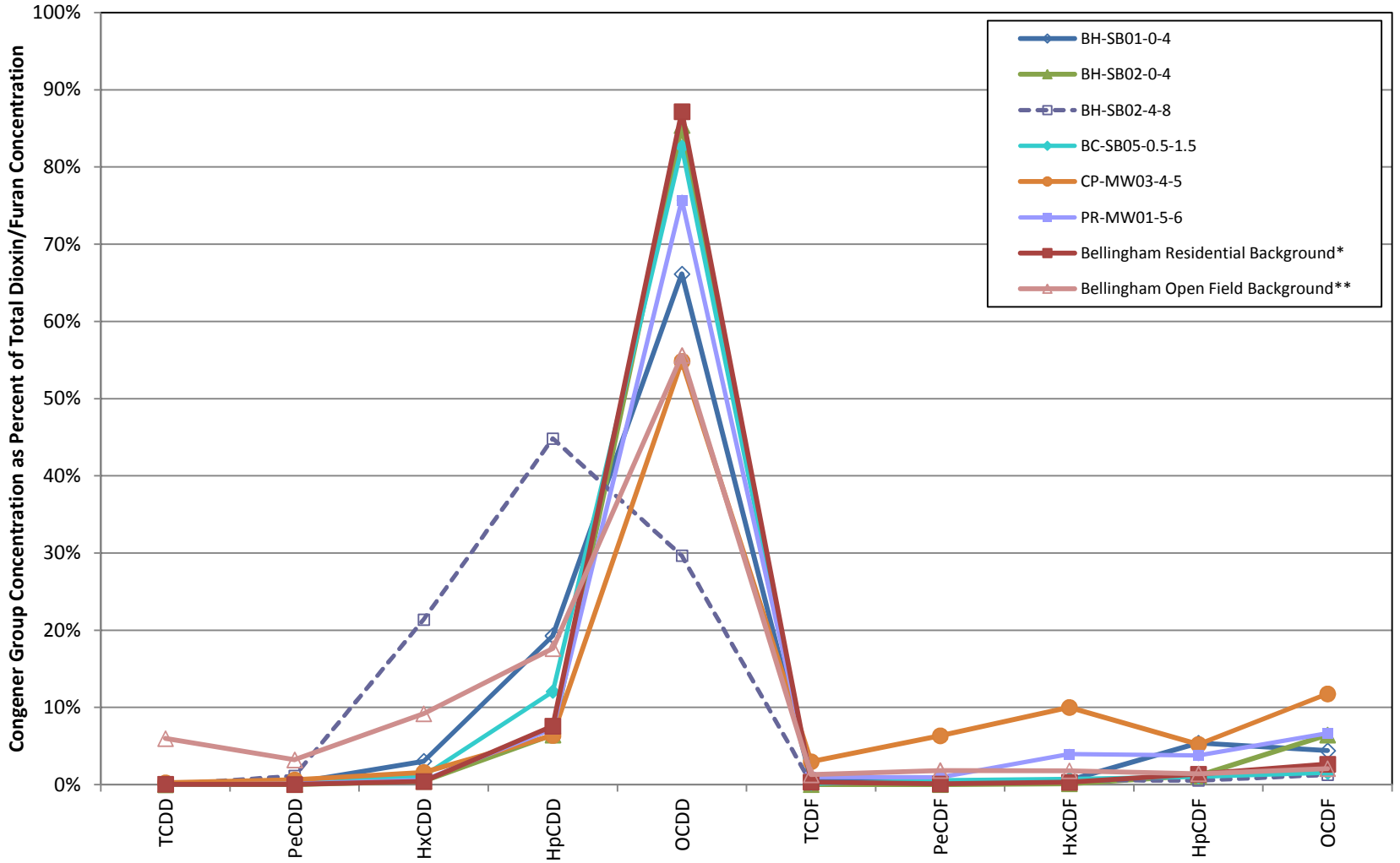
Aspect CONSULTING

Dioxin/Furan Concentrations, Site-Wide Soils

GP West Site RI/FS - Bellingham, WA

DATE: Apr 2013	PROJECT NO. 070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-9B
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-9B SiteWide_Soil_Dioxins.mxd



*: Average congener group concentrations from ten "residential background" surface soil samples collected in Bellingham, approximately 1 mile north-northwest of the Site (Ecology & Environment, 2002).

*: Average congener group concentrations from ten "open field background" surface soil samples collected in Bellingham, approximately 1 mile north-northwest of the Site (Ecology & Environment, 2002).

Figure 7-9C
Relative Distribution of Dioxin/Furan Congener Groups in Site and Bellingham Urban Background Soils

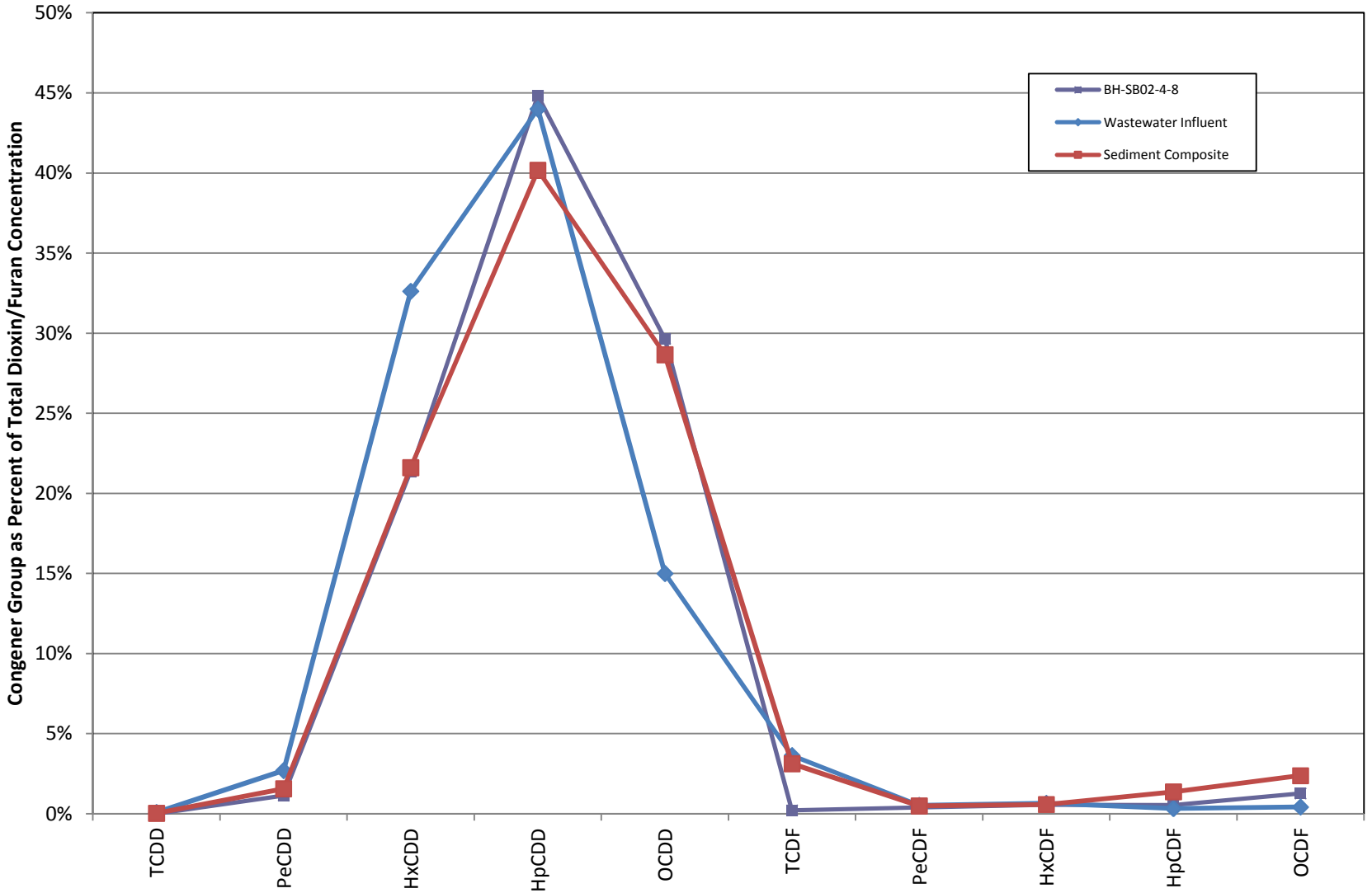


Figure 7-9D
Dioxin/Furan Congener Groups in BH-SB02-4-8, Wastewater, and Sediment Samples

Aspect Consulting
5/13/2013
V:\070188 Port Bellingham\Deliverables\RI - Draft Final for Public Comment\5-13-2013\Figures 8-9C 8-9D (dioxins)-Revised

Whatcom Waterway

Chlor-Alkali Area

Pulp and Tissue Mill Area

- Exploration Location Addressed in Subareas
- "Other" Exploration Location not Addressed in Other Subareas
- "Other" Location with Mercury Exceedance (>0.1 mg/kg) in Soil *
- "Other" Location with Metals (Other Than Mercury) Exceedance in Soil*
- "Other" Location with Total TPHs Exceedance (>2000 mg/kg) in Soil*
- "Other" Location with Total cPAHs Exceedance (>0.14 mg/kg) in Soil*

Notes:
- Refer to Table 7-10A for data.
- Exceedance of Screening Level for Saturated Soil (Unrestricted Land Use)

0 100 200 400 600 800 Feet

MILL NORTH
TRUE NORTH
45°

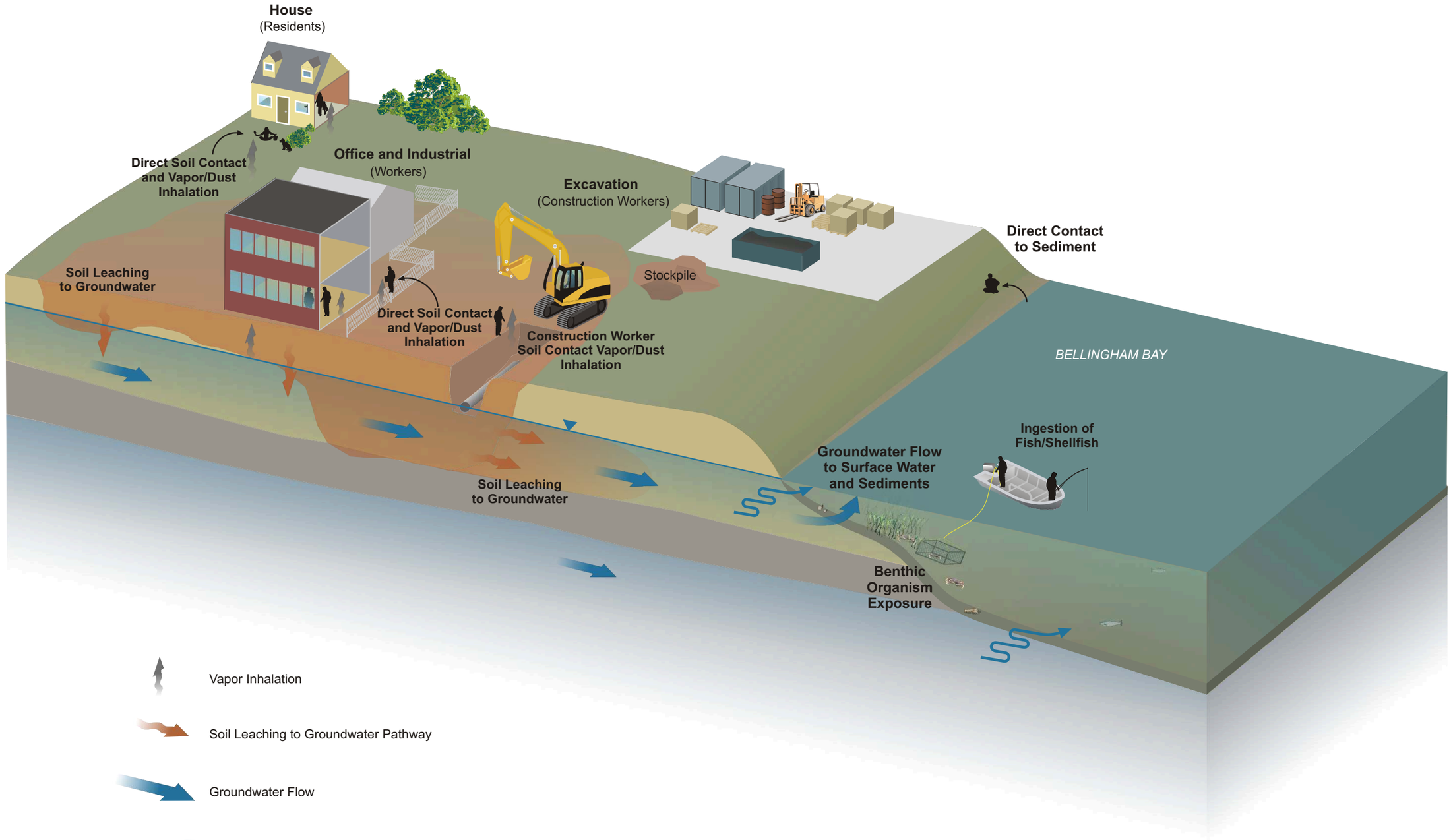
Aspect CONSULTING

Soil Exceedances in Areas Not Accounted for in Other Subareas

GP West Site RI/FS - Bellingham, WA

DATE:	PROJECT NO.
Apr 2013	070188
DESIGNED BY: SJG	
DRAWN BY: PPW	FIGURE NO. 7-10
REVISED BY: PPW	

Path: T:\projects_8\Port_of_Bellingham\Delivered\RI\Final\7-10 SoilExceeds_inOtherAreas.mxd



Aspect CONSULTING

Conceptual Site Model for Potential Contaminant Exposures

GP West Site RI/FS—Bellingham, WA

DATE: April 2013	PROJECT NO. 070188
DESIGNED BY: SG	
DRAWN BY: EG	FIGURE NO. 7-11
REVISED BY: -	