

RAP Executive Summary

ID No.: SWR No. 31547

Report Date: July 9, 2019 – Rev 4

Site stratigraphy from the ground surface to a depth of approximately 135 feet is separated into the following units: Fill Material (0 to 5 feet thick), A-Cohesive Zone (A-CZ) (8 to 15 feet thick); A-Transmissive Zone (A-TZ) (4 to 21 feet thick); B-Cohesive Zone (B-CZ) (6 to 19 feet thick); B-Transmissive Zone (B-TZ) (discontinuous, where present, 3 to 10 feet thick); C-Cohesive Zone (C-CZ) (8 to 20 feet thick); C-Transmissive Zone (C-TZ) (10 to 13 feet thick); D-Cohesive Zone (D-CZ) (17 to 36 feet thick); and D-Transmissive Zone (D-TZ).

As detailed in the Updated APAR Addendum (PBW, 2010), target COCs in soil and groundwater media were evaluated using the March 2010 TCEQ TRRP Residential Protective Concentration Levels (PCLs), or Residential Assessment Levels (RALs) to establish the Affected Property. Surface and subsurface soil data collected from 1997 through June 2010, with subsequent sampling in 2013 and 2014, were evaluated to assess the Affected Property and PCL Exceedance (PCLE) Zone in surface and subsurface soils. Groundwater data from the most recent sampling event (January 2019) were evaluated to assess COC exceedances in groundwater.

PCLE Zones

Soils

The soil critical PCLs (cPCLs) were established for the Site by using the lower of the commercial/industrial PCLs for on-site soils and residential PCLs for off-site soils for the following pathways:

- $^{Tot}Soil_{Comb}$ (Tier 1);
- $^{Air}Soil_{Inh-V}$ (Tier 1); and
- $^{GW}Soil_{Ing}$ (Tier 1 or 2).

Although the former wood preserving works portion of the Site is partially covered with crushed gravel and soil, the $^{Tot}Soil_{Comb}$ pathway was evaluated as potentially complete since potential future construction activities could occur at the Site. Most of the Englewood Intermodal Yard has a concrete pavement cover, and the rail area between the HWPW and the Englewood Intermodal Yard is covered with railroad ballast, which both prevents exposure to surface and subsurface soils in the area.

Comparing the surface and subsurface soil analytical data to the appropriate critical PCLs, concentrations of 16 COCs exceeded their respective critical PCLs:

Surface Soils

- 1,2-Diphenylhydrazine
- 2,4-Dinitrotoluene
- 2-Methylnaphthalene
- Benzene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Dibenzofuran
- Naphthalene
- Pentachlorophenol
- Arsenic
- Lead
- TPH

Subsurface Soils

- 2-Methylnaphthalene
- Benzene
- Naphthalene
- Pentachlorophenol

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The surface soil PCLE zone extends across the Original Process Area (SWMU 5) and Recent Process Area (SWMU 4), down the South Drainage Ditch (SDD) (SWMU 2), and across the Former Inactive Wastewater Lagoon (AOC 6). The PCLE zone was primarily defined by the concentrations of benzo(a)anthracene, benzo(a)pyrene, naphthalene, and pentachlorophenol in surface soils. Additional soil sampling conducted in 2013 indicates that the surface soil PCLE Zone extends into the Englewood Intermodal Yard. Additional soil sampling in 2014 indicated that the surface soil PCLE Zone (benzo(a)pyrene and pentachlorophenol) extended north beyond the fence to the edge of Liberty Road, but was delineated along the northeast side of the Site. Arsenic and lead were detected at concentrations greater than cPCLs in surface soil in the Englewood Intermodal Yard.

For subsurface soils, the PCLE zones for 2-methylnaphthalene, naphthalene (more mobile COCs in soils), and pentachlorophenol were extrapolated using available subsurface soil data and projecting the surface PCLE zone for those two COCs to the subsurface. By using the surface PCLE zone, this projection assumes the PCLE zone extends from the ground surface to the top of the uppermost GWBU (i.e. A-TZ). However, except for one sample in MW-18A, none of the groundwater samples analyzed for pentachlorophenol from A-TZ wells collected during the 2018 and 2019 groundwater monitoring events had detected pentachlorophenol concentrations above the RAL, suggesting the pentachlorophenol concentrations in surface and subsurface soils are protective of groundwater. Pentachlorophenol was detected in MW-18A during the January 2019 sampling event, which was the first detection in the well since 2002. The detection will be confirmed during the July 2019 site-wide groundwater sampling event. The subsurface PCLE zone is confined to the area around the Original and Recent Process Areas (SWMUs 4 and 5), with a small area of naphthalene subsoil PCLE Zone in the Englewood Intermodal Yard area.

The surface soil and subsurface soil PCLE Zones will be re-evaluated following a proposed assessment for total petroleum hydrocarbons (TPH) in surface and subsurface soils. In response to the TCEQ 4th TNOD stating that “the current assessment of the total petroleum hydrocarbon – non-aqueous phase liquid (TPH-NAPL) seep source(s) and extent is insufficient because only a limited soil assessment was performed” and the TCEQ letter dated February 6, 2019 requesting additional TPH delineation in soils, UPRR proposes to conduct a TPH-NAPL Assessment primarily within the Englewood Intermodal Yard area consisting of rapid optical screening technology approaches (i.e. TarGOST) and soil sampling for TPH to evaluate the affected soils laterally and vertically pursuant to 30 TAC §350.51(d). Details of the additional assessment are provided on Worksheet 2.0.

Groundwater

A total of 109 groundwater monitoring wells have been installed on and off-site in the GWBUs A-TZ, B-CZ/B-TZ, C-TZ, and D-TZ. Groundwater in A-TZ generally flows to the northeast; groundwater in B-CZ/B-TZ generally flows across the Site to the east; groundwater in the C-TZ flows from northeast to southwest, and groundwater in the D-TZ appears to flow to the northwest.

Based on the recent groundwater analytical data from the 2018 and January 2019 groundwater sampling events, concentrations of the following 23 target COCs exceeded their respective RALs where detected or had a SDL greater than the cPCL (>SDL) for COCs with no detections:

VOCs

- 1,2-Dichloroethane (B-TZ, one well)
- Benzene (A-TZ, B-TZ, C-TZ)
- Toluene (C-TZ only)
- Vinyl Chloride (A-TZ and C-TZ)

SVOCs

- 1,2-Diphenylhydrazine (B-TZ & C-TZ)
- 2,4-Dimethylphenol (A-TZ, B-TZ, C-TZ)
- 2,6-Dinitrotoluene (B-CZ/B-TZ & C-TZ)
- 2-Methylnaphthalene (A-TZ, B-CZ/B-TZ, & C-TZ)

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Metals

- Arsenic (A-TZ, B-CZ/B-TZ, C-TZ)
- Lead (A-TZ, C-TZ, & D-TZ)
- 4,6-Dinitro-2-methylphenol (B-TZ, one well)
- Benzo(a)anthracene (B-CZ/B-TZ)
- Benzo(a)pyrene (B-CZ/B-TZ, C-TZ, and D-TZ)
- bis(2-Chloroethoxy)methane (B-TZ, one well)
- bis(2-Ethylhexyl)phthalate (A-TZ, one well)
- Dibenzofuran (A-TZ, B-CZ/B-TZ, & C-TZ)
- Fluoranthene (B-TZ only, one well)
- Fluorene (B-TZ only, one well)
- Naphthalene (A-TZ, B-CZ/B-TZ, & C-TZ)
- Pentachlorophenol (A-TZ, B-CZ/B-TZ, & C-TZ)
- Phenanthrene (B-TZ only, one well)
- Phenol (A-TZ & B-TZ)
- Pyrene (B-TZ, one well)

As noted above, semi-volatile organic compounds (SVOCs) fluoranthene, fluorene, phenanthrene, and pyrene were detected above cPCLs in only one well, MW-74B, during the March 2018 sampling event. During the other three sampling events in 2018 and 2019, the concentrations of fluoranthene, fluorene, phenanthrene, and pyrene were detected below cPCLs.

SVOCs 4,6-dinitro-2-methylphenol (MW-84B, June 2018), bis(2-Chloroethoxy)methane (MW-68B, January 2019), and bis(2-Ethylhexyl)phthalate (MW-15A, May 2018) were detected above cPCLs in one well during one sampling event. During the other three sampling events in 2018 and 2019, the concentrations of 4,6-dinitro-2-methylphenol, bis(2-Chloroethoxy)methane, and bis(2-Ethylhexyl)phthalate were detected below cPCLs.

Lead was detected above cPCL in MW-36A and MW-36D during the March/April 2018 sampling event and in MW-27C during the January/February 2018 sampling event. All other lead concentrations were below cPCL during all other sampling events in 2018 and 2019, indicating that the detections were not verified.

The location and extent of the groundwater PCLE zones were identified as areas where COCs are present in groundwater at concentrations that exceed the critical PCL ($^{GW}GW_{ing}$) using the most recent groundwater data (January 2019). Groundwater PCLE Zones were mapped for the three upper GWBUs: A-TZ, B-CZ/B-TZ, and C-TZ. One COC, benzo(a)pyrene, has been detected in the D-TZ GWBU during two groundwater sampling events in 2018. The benzo(a)pyrene concentration detected during the January 2019 sampling event was below the RAL and J-flagged (estimated). UPRR will evaluate further investigation of the D-TZ following the next sampling event in July 2019.

Based on groundwater data collected in 2018 and 2019, arsenic concentrations have been detected above the residential PCL in some of the monitoring wells at the Site, but have varied between sampling events in 2018 and 2019. The January 2019 groundwater data indicate that arsenic concentrations have not been delineated to residential PCLs in the A-TZ and B-CZ/B-TZ GWBUs. As discussed on Worksheet 2.0, UPRR plans to install additional monitoring wells in response to the TCEQ 4th TNOD dated April 11, 2019 requesting additional assessment for arsenic in groundwater to the west and north of the Site in the A-TZ and B-CZ/B-TZ.

The TCEQ 4th TNOD Deficiency No. Specific T59 requested that UPRR evaluate the A-TZ groundwater near monitoring well MW-68B as a possible source for potential vapor intrusion (VI) exposure. UPRR conducted the interim assessment of the A-TZ groundwater with the installation and