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PHASE II ENVIRONMENTAL SITE ASSESSMENT

FOR:

COLOPLAST
1525, 1601, 1615 WEST RIVER ROAD NORTH
MINNEAPOLIS, MINNESOTA

PREPARED FOR:

PREPARED BY:

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1.0 INTRODUCTION

RSP Architects retained Pinnacle Engineering, Inc. (Pinnacle) to complete a Phase II Environmental Site Assessment (Phase II) of the Coloplast facility located at 1615, 1601, and 1525 West River Road North, Minneapolis, MN (Site). The Phase II was completed to evaluate potential contaminated fill beneath the Site and evaluate groundwater conditions. A Phase I Environmental Site Assessment completed by GaiaTech Incorporated of Chicago, Illinois identified the presence of the fill. Although the Phase I did not reveal any ASTM Recognized Environmental Conditions at the Site, Coloplast plans to re-develop portions of the Site. Therefore, Pinnacle conducted the Phase II to determine if management of contaminated fill/groundwater would be necessary to complete the re-development.

2.0 BACKGROUND INFORMATION

The Site is located in an industrial area north of downtown Minneapolis, along the west bank of the Mississippi River, within the SE ¼ of Section 15, Township 29N, Range 24W. Please refer to Figure 1 for a Site location map. The Site was historically used as a sawmill and was later occupied by multiple railroad tracks. The current structures on the Site were constructed between 1974 and 1979. Coloplast, a manufacturer of medical devices, has operated at the Site since the mid 1980s. The Site is 5.41 acres and consists of three buildings with associated asphalt parking areas.

The Site rests on historic fill that has been spread over Mississippi River alluvial deposits. Groundwater occurs at approximately 30 feet below the ground surface. Groundwater flow is likely to the east to southeast toward the Mississippi River, based on local topography and published literature.

3.0 SCOPE OF WORK

To evaluate potential contaminated fill and groundwater impacts at the Site the following scope of work was completed.

- Prepared a Site health and safety plan for field activities.
- Oversaw the advancement of fourteen push probe soil borings, ranging in depth from 8 feet to 32 feet.
- Collected continuous soil samples from the borings for classification and field screening with a photoionization (PID) detector.

- Submitted 27 soil samples collected at selected depths from the borings for laboratory analysis of polynuclear aromatic hydrocarbons (PAH), volatile organic compounds (VOCs), and RCRA-8 metals.
- Submitted five soil samples for laboratory analysis of PCBs.
- Submitted six groundwater samples for laboratory analysis of PAH, VOCs, and RCRA-8 metals.
- Submitted two soil gas samples for laboratory analysis of VOCs via EPA method TO-15.
- Prepared a report documenting the sampling locations, methodologies, analysis results and our conclusions and recommendations.

The push probe borings were completed on February 21-23, 2007, at the locations shown on Figure 2. Please refer to Table 1 for the depths, sampling intervals and parameter lists for the borings. Methods used to complete the scope of work are contained in Appendix A.

4.0 RESULTS

4.1 Soils

The borings encountered fill material overlying native sand deposits, associated with the Mississippi River. The fill is highly variable both in terms of thickness and composition. The fill was thin along the west side of the Site, typically about two feet, but apparently as little as one foot. The fill material in that area consists of dark brown to black sand of variable composition, including silty sand, fine to coarse-grained sand, gravel, and crushed limestone. The fill thickness increases across the Site toward the east, indicating that the present surface has been built up considerably from the original level of the river floodplain. The thickness in the northeast is about 22 feet, whereas it reaches at least 32 feet in the southeast corner, where the underlying native sand was apparently not reached. The fill is quite variable in composition, with the upper 6 to 28 feet generally dark brown to black and consisting of variable sand, gravel, clay, clinkers, crushed limestone, demolition debris, and assorted other debris. Several borings in the east central portion of the Site encountered about 4 to 20 feet of white to light gray to brown sand, typically fine- to medium-grained, and sometimes mixed with crushed limestone, gravel, clay, or debris. Along the east side of the Site, the lowermost portion of the fill consisted of one to four feet of wood material, apparently remnants from the sawmill operation that once occupied the river floodplain in the area. The wood material is somewhat variable, consisting of sawdust, wood chips, bark chips, or fiber, sometimes mixed with sand or silt. The color is generally dark brown to reddish brown to dark gray.

The fill material overlies native sands deposited by the Mississippi River. Along the west side of the Site where the fill is thin, and the sand is encountered at shallow depths, mostly above the water table, the sand is generally fine- to medium-grained with a trace to a little coarse sand and gravel, typically in thin layers, and some silty sand. Above the water table, these sands are generally light brown to brown to yellowish brown in color. Below the water table, they are generally a darker grayish brown. In the eastern portion of the Site, where the sand underlies thick sections of fill, the sand is generally darker in color, ranging from greenish gray to grayish brown to dark gray. Most of the sand is fine to medium-grained, with minor amounts of coarse sand and gravel, but in some areas the sand is substantially silty or clayey. Static groundwater was approximately 27 to 30 feet below the surface. Please refer to Appendix B for soil boring logs and geologic cross-sections.

4.2 Field Screening

Field screening with a PID did not detect any organic vapors in the borings, except for a low level detection of 4 ppm in the 27-28 foot interval in SB-14. PID readings are shown on the boring logs in Appendix B.

4.3 Soil Analytical Results

Soil samples were collected and analyzed as shown in Table 1. Sample depths were selected to analyze the upper four feet of soil and the uppermost native soil in each boring. These depths were selected to evaluate potential contaminants in the fill material to be encountered during construction and to evaluate potential contaminant impacts leaching into native soil. Please refer to Table 2 for a summary of the soil analytical results compared with regulatory standards. The regulatory standards include Tier II Industrial Soil Reference Values (SRV) and Tier I Soil Leaching Values (SLV). SRV and SLV are risk-based values established by the Minnesota Pollution Control Agency (MPCA). Concentrations above the SLV indicate that soil contamination could result in groundwater being impacted above acceptable health risk limits. SRV limits set acceptable soil concentrations based on common exposure pathways, including ingestion, dermal contact and inhalation of vapors and particulates.

RCRA-8 metals were detected in all soil samples. Arsenic was detected in all except three soil samples, with all the non-detects being in deeper samples, 24 feet or more below surface. The maximum arsenic concentration was 34 mg/kg in SB-9 (2-4'). Five arsenic detections are above the SRV of 20 mg/kg, and six are above the SLV of 15.1 mg/kg. Arsenic was the only RCRA-8 metal detected above the SRV in any of the soil samples. Three additional metals, including chromium, cadmium, and selenium were

detected in some samples at levels above the SLV. Chromium was detected in all soil samples, generally but not always, at higher concentrations within the shallower sample for a specific boring. The maximum chromium concentration was 25 mg/kg in SB-13 (2-4'). Two chromium detections are above the SLV of 18 mg/kg, but far below the industrial SRV of 650 mg/kg (for chromium VI). Cadmium was detected in all except two soil samples, with both of the non-detects being in deeper samples, more than 24 feet below surface. The maximum cadmium concentration was 5 mg/kg in SB-2 (1-2'). Two cadmium detections are above the SLV of 4.4 mg/kg. Selenium was reported above the detection limit in only four soil samples, all of those being less than five feet below the surface. Two of the detections were above the SLV of 1.5 mg/kg, with a maximum concentration of 2.4 mg/kg in SB-12 (2-4'). Mercury was detected in 15 of the soil samples, typically in the shallower sample within a specific boring. The highest mercury concentration was 0.4 mg/kg in SB-14 (2-4'), still substantially below the SRV of 1.5 mg/kg or the SLV of 1.6 mg/kg. Barium was detected in all soil samples, with a maximum concentration of 160 mg/kg in SB-9 (2-4'). All barium detections are far below the SRV of 18,000 mg/kg or the SLV of 842 mg/kg. Lead was also detected in all soil samples, in nearly all cases at substantially higher levels in the shallower sample within a specific boring. The maximum lead concentration was 410 mg/kg in SB-2 (1-2'), below the SRV of 700 mg/kg or the SLV of 525 mg/kg. Silver was detected in only four soil samples, three of which were the shallower sample within the specific boring. The maximum silver concentration was only 0.78 mg/kg in SB-6 (2-4'), well below the SRV of 1300 mg/kg and well below the SLV of 3.9 mg/kg.

Petroleum impacts to soil consisted of low levels of petroleum-related VOCs. Low-level petroleum-related VOCs were detected at SB-1, SB-2, SB-3, SB-4, SB-6, SB-10, and SB-14 as shown in Table 2. Nearly all of these borings were located along the west or north sides of the Site, with the notable exception of SB-14, which was near the southeast corner. All detections were in the shallower of the two samples within a specific boring, with the exception, once again, of SB-14. None of the petroleum-related VOC concentrations exceeded or were even near the industrial SRV (where the SRV is established) for the respective compounds. Benzene was reported above the detection limit only in SB-2 (1-2'), where the concentration was 0.049 mg/kg, marginally above the SLV of 0.034 mg/kg. None of the other petroleum-related VOCs were detected in concentrations exceeding the SLV (where the SLV has been established).

Chlorinated VOCs were not detected in soil samples from any of the borings except for SB-1, where tetrachoroethene was detected at a concentration of 0.16 mg/kg in the near surface sample (0-2'). This concentration exceeds the SLV of 0.068 mg/kg but is below the industrial SRV of 131 mg/kg.

PAHs were detected in soil samples from all borings except SB-7. In all cases the detections were for samples collected from fill material. To evaluate potential health risks the benzo(a)pyrene (BaP) equivalent was calculated for each PAH detection. The highest BaP occurred in the shallower sample at SB-8 (14-16') with a value of 12.34 mg/kg. This exceeds the SLV of 10.2 mg/kg. The deeper sample at SB-14 (27-28') has a BaP of 10.044 mg/kg, only slightly below the SLV. Additionally, the shallower samples at SB-2 and SB-4 exceed the industrial SRV of 3.0 mg/kg, and the shallower sample at SB-9 is slightly below the SRV.

Five soil samples were submitted to the laboratory for PCB analyses. The submitted samples included SB-2 (1-2'), SB-4 (1-2'), SB-8 (14-16'), SB-9 (2-4'), and SB-14 (27-28'). No PCBs were detected in the laboratory analysis of these samples.

Please refer to Appendix C for the complete laboratory reports.

4.4 Groundwater Analytical Results

Groundwater samples were collected from six borings and analyzed as shown in Table 1. Groundwater samples for PAHs and metals were filtered in the field by passing the water through an inline filter, using the methods described in Appendix A. Please refer to Table 3 for a summary of the groundwater analytical results compared with the Minnesota Department of Health (MDH) Health Risk Limits (HRL) for drinking water.

Three of the RCRA-8 metals were detected in groundwater samples collected from the soil borings. These include arsenic, barium, and lead. Arsenic was detected in groundwater from all the sampled borings except SB-3. The highest level of arsenic was in SB-10, located near the northeast corner of the Site, with a concentration of 37 micrograms/liter (ug/l). The arsenic concentrations in all five borings exceed the Maximum Contaminant Level (MCL) of 10 ug/l. Barium was detected in groundwater from all six borings, with the highest level in SB-14, at the southeast corner of the Site, with a concentration of 880 ug/l. This is substantially below the HRL of 2000 ug/l. Lead was detected in groundwater samples from four of the six borings, with the highest level at SB-10, near the northeast corner of the Site, with a concentration of 48 ug/l. A HRL is not established for lead.

Please refer to Appendix C for the complete laboratory reports.

4.5 Soil Gas Analytical Results

Soil gas samples were collected from SB-6 and SB-8 from a depth of five feet below the surface and analyzed for VOCs via EPA Method TO-15. Please refer to Table 4 for a

summary of compounds detected in the soil gas samples compared to Industrial-Commercial Intrusion Screening Values (ISV). All detected compounds in the soil gas sample were below ISVs, except for benzene, which was detected at 6.1 ug/m^3, above the ISV of 1.3-4.5 ug/m^3.

Please refer to Appendix C for the complete laboratory reports.

5.0 CONCLUSIONS

5.1 Soil Impacts

RCRA-8 Metals

Arsenic is the only metal that exceeded the industrial SRV for soil. The arsenic impacts appear to be isolated to the fill material and have not impacted native soil beneath the Site. Arsenic concentrations were also above the SLV. Lead concentrations in soil were also elevated, but are below the industrial SRV and SLV.

Petroleum-Related VOCs

Petroleum-related VOC impacts to soil were minimal. All impacts were below regulatory standards, except for benzene, which was above the SLV at one location.

Chlorinated VOCs

Chlorinated VOC impacts to soil were limited to tetrachloroethene (PCE) at one location, possibly the result of surficial wash from the property to the west of the Site. The PCE impacts were below the industrial SRV, but above the SLV.

PAHs

PAHs were detected in nearly all samples collected from the fill material but not from the underlying native soil. The origin of the PAHs is likely coal slag in the fill.

PCBs

No PCB impacts to the soil were detected. Five soil samples analyzed for PCBs were all below the laboratory detection limit.

5.2 Groundwater Impacts

RCRA-8 Metals

Arsenic is the only metal detected in groundwater that exceeded regulatory standards for drinking water. The arsenic impacts were consistent across the Site, suggesting the impacts may be the result of historical activities in the area of the Site.

Petroleum-Related VOCs

Petroleum-related VOC impacts to the groundwater were minimal.

Chlorinated VOCs

Chlorinated VOC impacts to groundwater were below regulatory standards for drinking water, except for cis-1,2-dichloroethene and vinyl chloride. Both of these compounds were detected in SB-10 on the northern edge of the Site. Solvent detects were primarily limited to SB-1 and SB-10, suggesting a possible off-Site source to the west of the northern portion of the Site.

PAHs

No PAHs were detected in groundwater at the Site.

5.3 Soil Gas Impacts

Soil gas impacts were minor, with benzene slightly exceeding the Industrial-Commercial ISV at one location.

6.0 RECOMMENDATIONS

Pinnacle recommends that the Minnesota Duty Officer be notified of the presence of contamination at the Site, and the Site be entered into the MPCA Voluntary Investigation and Cleanup (VIC) Program. The VIC program can provide a No Association Determination (NAD) to Coloplast for the management of contaminated soil encountered during redevelopment of the Site. To obtain the NAD, a Response Action Plan, along with a Construction Contingency Plan, should be prepared and submitted to VIC for approval prior to beginning construction. In addition, Pinnacle recommends that Coloplast request a No Further Action letter following completion of Site redevelopment.

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7.0 STANDARD OF CARE

Environmental services performed by Pinnacle scientists and engineers for the project have been conducted in a manner consistent with the degree of care and technical skill appropriately exercised by environmental professionals currently practicing in this area. Recommendations or opinions contained in this report represent our professional judgment and are generally based upon available information and currently accepted practices for environmental professionals. Other than this, no warranty is expressed, nor is it implied. Information in this report obtained during interviews was accepted in good faith. Information obtained through databases is limited to the accuracy of those databases.

FIGURE 1
SITE LOCATION

FIGURE 2
SITE MAP

TABLE 1
SOIL BORING INFORMATION

TABLE 2
SOIL ANALYTICAL RESULTS

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TABLE 3
GROUNDWATER ANALYTICAL RESULTS

TABLE 4
SOIL GAS ANALYTICAL RESULTS

APPENDIX A
METHODS

APPENDIX B
BORING LOGS AND CROSS-SECTIONS

APPENDIX C
LABORATORY REPORTS