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PHASE II SOIL AND GROUNDWATER INVESTIGATION REPORT
VOLUNTARY CLEANUP PROGRAM
SUPER SALVAGE, INC., PARCEL AT BUZZARD POINT, SQUARE 0605, LOT 0802
WASHINGTON, D.C.

by Haley & Aldrich, Inc.
McLean, Virginia

for McKissack & McKissack
Washington, D.C.

File No. 40223-002

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Attention: Mr. Mark Babbitt, P.E.

Subject: Phase II Soil and Groundwater Investigation Report
Voluntary Cleanup Program
Super Salvage, Inc., Parcel at Buzzard Point, Square 0605, Lot 0802
Washington, D.C.

Ladies and Gentlemen:

Haley & Aldrich, Inc. (Haley & Aldrich) prepared this Phase II Soil and Groundwater Investigation Report (Report) for the Super Salvage, Inc., (Super Salvage) parcel at Buzzard Point located in Washington, D.C. ([Site]; Figure 1). The objective of this soil and groundwater investigation was to provide an evaluation of the potential impacts associated with the recognized environmental conditions (RECs) at the Site identified in the "Report on ASTM Phase I Environmental Site Assessment" dated 30 August 2013 (Haley & Aldrich, 2013a). The investigation was conducted in a manner consistent with ASTM E1903-11 Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. The conclusions and recommendations provided in this Report will assist the application for Voluntary Cleanup Program prepared for the District of Columbia Department of General Services.

Background

The Site is bound by Potomac Avenue, SW to the north, S Street, SW to the south, 1st Street, SW to the east and a property owned by Rollingwood Real Estate, LLC, (Rollingwood) property to the west, and is currently occupied by a salvage yard for diverse metal structures. A Phase I environmental site assessment was conducted at the Site that identified the following RECs:

- Potentially unlined/unpaved sump that collects Site run-off;
- Heavy staining of concrete;
- Oil layer in secondary containment under aboveground storage tanks (ASTs); and
- Concrete staining next to the northern AST.

The Site is planned for redevelopment as part of the new D.C. United soccer stadium. At this time, design drawings have not been prepared for the new stadium. For the purpose of the Voluntary

Cleanup Program application, an excavation of up 10 feet below ground surface (bgs) has been assumed for foundation construction of the proposed stadium. The soil investigation considered this depth of excavation to assess soil disposition during demolition.

Subsurface Investigation

Soil and groundwater investigation activities were conducted at the Site in order to evaluate subsurface conditions and assess whether current and/or former operations at and adjacent to the Site have impacted soil and groundwater quality. These investigation activities were conducted at the Site between 9 and 27 April 2015 at the identified REC locations. Additionally, samples were collected north of the Site to investigate impacts to the adjacent property, due to Super Salvage's use of that parcel.

The following proposed sample locations were not accessible during the field investigation, therefore samples were not collected:

- Sample location GTW-605-802-3 (underlain by a significant amount of concrete);
- Sample locations GTW-605-802-4 and GSS-605-802-5 (located under storage piles); and
- Sample location GTW-605-802-8 (underlain by a significant amount of concrete).

At select locations, temporary groundwater monitoring wells were installed for groundwater sample collection and analysis. The sample analyses at each location were selected based on the potential chemicals of concern associated with the RECs. Soil and groundwater sample locations are shown in Figure 2.

SOIL SAMPLING

Soil samples were collected during advancement of direct-push borings (GSS-605-802-10, GSS-605-802-11, and GSS-605-802-12) and installation of the temporary groundwater monitoring wells (GTW-605-802-1, GTW-605-802-2, GTW-605-802-6, GTW-605-802-7, GTW-605-802-9). Borings were advanced using a track- mounted direct-push drill rig to depths ranging from 10 to 30 feet bgs. Each boring was continuously logged in accordance with the Unified Soil Classification System. Continuous soil cores were collected with hydraulic-percussive driving of a stainless steel sampling probe equipped with dedicated acetate tube liners. Soil cores were observed and documented visually for discoloration and screened for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). The soil sample was collected from the depth interval exhibiting the highest PID reading. Samples were placed in a cooler with ice and submitted for analysis to Pace Analytical Services, Inc., (Pace) under standard chain of custody procedures.

Boring logs are provided as Appendix A.

GROUNDWATER SAMPLING

Groundwater samples were collected from temporary groundwater monitoring wells (GTW-605-802-1, GTW-605-802-2, GTW-605-802-6, GTW-605-802-7, GTW-605-802-9) installed after completion of direct-push borings to 30 feet bgs. Temporary polyethylene chloride casing was installed with 5 feet of screen from approximately 23 to 30 feet bgs. Samples were collected using low-flow sampling techniques. Field parameters were measured during purging using an in-line flow cell. Groundwater samples were collected after field parameters stabilized in accordance with standard operating procedures. Samples were collected directly from dedicated plastic tubing installed in each well into laboratory-provided containers in a manner to avoid sample agitation and constituent volatilization. Samples were placed in a cooler with ice and submitted for analysis to Pace under standard chain of custody procedures.

Boring logs are provided as Appendix A.

SUBSURFACE FINDINGS

The subsurface investigation activities described herein did not define the lateral and vertical extent of chemical concentrations in soil and groundwater at the Site. The objective of this subsurface investigation was to explore the identified RECs to evaluate current conditions and assess the nature and general magnitude of potential impacts.

Soil and groundwater screening levels were selected for the protection of human health and groundwater quality based on the understanding that the Site will be redeveloped into a professional soccer stadium.

Soil Results

Soil sample analytical results were compared to the following screening levels:

- DC Tier 0 Soil Standards from the Tier 0 Standards Final Rulemaking published at 40 DCR 7835, 7892 (12 November 1993), as amended by Final Rulemaking published at 46 DCR 7699 (1 October 1999); and
- Environmental Protection Agency (EPA) Regional Screening Level for Industrial Soil from the EPA Regional Screening Level Tables (May 2014).

For the purpose of this Report, “soil screening levels” are the lower of the above screening levels. Soil sample collection depths ranged from 0 to 15 feet bgs. The following summarizes the results by REC.

- Unlined/unpaved sump (sample locations DP-001 and DP-002): Arsenic, lead, benzo(a)pyrene, and diesel range total petroleum hydrocarbons (TPH-DRO) were detected at concentrations above soil screening levels. Soil samples were not submitted for polychlorinated biphenyl (PCB) analysis because soil samples collected in the same general area at the adjacent Rollingwood property did not PCB concentrations above soil screening levels (Haley & Aldrich, 2013b).

- Heavy staining of concrete (GSS-605-802-11): Arsenic was detected at a concentration above the soil screening level. Additionally, the highest PID reading was recorded at a depth of 10 to 15 feet bgs, therefore the soil sample was collected from this interval.
- Oil layer in secondary containment under AST (sample locations GTW-605-802-1, GTW-605-802-2, and GSS-605-802-12): Arsenic and TPH-DRO were detected at concentrations above soil screening levels.
- Concrete staining next to northern AST (sample locations GTW-605-802-9 and GSS-605-802-10): Arsenic, lead, PCBs, ethylbenzene, and TPH-DRO were detected at concentrations above soil screening levels. Reported detection limits for PAHs were elevated (due to sample dilution) above soil screening levels.
- Impacts to the adjacent property (sample locations GTW-605-802-6 and GTW-605-802-7): Arsenic and TPH-DRO were detected at concentrations above soil screening levels. Reported detection limits for PAHs were elevated (due to sample dilution) above soil screening levels.

The reported concentrations of arsenic and lead in soil above the soil screening levels may be within naturally occurring background at the Site, and if so, would not warrant remediation.

For the "high" order of magnitude cost of soil remediation (see Summary and Recommendations) at the northern AST area and impacts to the adjacent property, it was conservatively assumed that PAHs are present in soil at concentrations greater than the soil screening levels in these areas until future investigation/sampling confirms otherwise.

Soil sample analytical results and soil screening levels are provided in Table I. Laboratory analytical reports are provided as Appendix B.

Groundwater Results

Groundwater sample analytical results were compared to the following screening levels:

- DC Tier 1 Risk-based groundwater screening levels for indoor and outdoor inhalation of the resident child (building occupant) from the Risk-Based Corrective Action Technical Guidance, Table 5-8 (June 2011);
- DC Tier 1 Risk-based groundwater screening levels for dermal contact of the construction worker from the Risk-Based Corrective Action Technical Guidance, Table 5-8 (June 2011) and
- EPA regional maximum contaminant levels from the EPA Regional Screening Level (RSL) Summary Table (January 2015).

For the purpose of this Report, "groundwater screening levels" are the lower of the above screening levels. The following summarizes the results by REC.

- Unlined/unpaved sump (soil sample locations DP-001 and DP-002): Groundwater samples were not collected.

- Heavy staining of concrete (soil sample location GSS-605-802-11): Groundwater samples were not collected.
- Oil layer in secondary containment under AST (sample locations GTW-605-802-1 and GTW-605-802-2): Arsenic was detected at concentrations above groundwater screening levels. Reported detection limits for thallium and select semi-volatile organic compounds ([SVOCs]; benzo[a]pyrene, and pentachlorophenol) were elevated above groundwater screening levels.
- Concrete staining next to northern AST (sample location GTW-605-802-9): Antimony, arsenic, lead, and methylene chloride were detected at concentrations above groundwater screening levels. Reported detection limits for thallium, select VOCs (1,2-dibromo-3-chloropropane, 1,2-dibromoethane and vinyl chloride), and select SVOCs (benzo[a]pyrene, hexachlorobenzene, and pentachlorophenol) were elevated above groundwater screening levels.
- Impacts to the adjacent property (sample locations GTW-605-802-6 and GTW-605-802-7): Lead and methylene chloride were detected at concentrations above the groundwater screening level. Reported detection limits for thallium, select VOCs (1,2-dibromo-3-chloropropane, 1,2-dibromoethane and vinyl chloride), and select SVOCs (benzo[a]pyrene, and pentachlorophenol) were elevated above groundwater screening levels.

The reported concentrations of arsenic in groundwater above the groundwater screening level may be within naturally occurring background at the Site, and if so, would not warrant remediation.

Although detection limits for SVOCs (benzo(a)pyrene, hexachlorobenzene, and pentachlorophenol) in groundwater were above groundwater screening levels, there were no other SVOCs detected. PAHs are usually reported as constituents of higher molecular weight TPH mixtures, such as TPH-DRO and oil range total petroleum hydrocarbons (TPH). Typically when detected, more than one PAH is reported. TPH mixtures were not detected in groundwater, and although benzo(a)pyrene was reported at an elevated detection limit slightly greater than the groundwater screening level, no other PAHs were detected. It is therefore unlikely that benzo(a)pyrene is detected at concentrations greater than the groundwater screening level in the groundwater samples collected at the Site.

Methylene chloride was not detected in soil samples in proximity to the groundwater sample locations with reported methylene chloride in groundwater above groundwater screening levels . Methylene chloride is a typical laboratory contaminant. Since a potential source of methylene chloride was not identified in soil at these locations, detections of methylene chloride in the groundwater samples collected at locations GTW-605-802-6 and GTW-605-802-9 may be attributed to laboratory contamination.

Thallium was not present in concentrations above the soil screening level. Although the detection limit for thallium in groundwater is greater than the groundwater screening level, it appears unlikely that concentrations of thallium are of concern at the Site. Other VOCs with elevated detection limits and thallium were not detected in soil and are assumed not to be present in groundwater without this pathway.

Groundwater sample analytical results and groundwater screening levels are provided in Table I. Laboratory analytical reports are provided as Appendix B.

Summary and Recommendations

In summary, soil and groundwater samples were collected for evaluation of the presence of chemicals at the five identified RECs associated with the Site; four sample locations were inaccessible. The following is recommended:

- Groundwater sample collection at the unlined/unpaved sump area to investigation concentrations and field observations noted at the adjacent Rollingwood property (Haley & Aldrich, 2013b);
- Sample collection at the inaccessible sample locations;
- Preparation of a Site-specific background metals evaluation for soil and groundwater;
- Preparation of a soil management plan to provide guidance on the demolition environmental monitoring process; and
- Implementation of the soil management plan during Site redevelopment to provide environmental oversight of demolition activities and ensure soil is properly segregated and disposed of off-Site.

Based on the analytical results collected to date, soil remediation may be required to reduce the threat to human health for the on-Site construction worker and future occupant and to reduce the threat to groundwater quality. Potential order of magnitude cost impacts from the identified RECs at the Site range from $240,000 to $3,600,000. These costs and their associated assumptions are summarized in Table 3. The soil screening levels and groundwater screening levels used for evaluation of impacts at the Site do not account for cumulative health risks. Additionally, groundwater remediation and/or vapor intrusion mitigation in the construction of the stadium may be required to reduce the threat to human health.

These sampling/characterization recommendations and the potential order of magnitude costs for soil remediation are based on the currently available data understanding that several unanticipated Site restrictions associated with an active salvage yard and unknown subsurface restrictions were encountered during the investigation activities described in this Report. The presence of a significant layer of concrete under portions of the Site restricted investigation at the locations indicated previously.

Limitations

All recommendations are based solely upon Site conditions in existence at the time of performance of services. Haley & Aldrich is unable to report on, or accurately predict events that may impact the Site or system following preparation of this document, whether occurring naturally or caused by external forces. The recommendations provided by Haley & Aldrich are based solely on the scope of work

conducted and the sources of information referenced in this document. Services hereunder were performed in accordance with our agreement and understanding with, and solely for the use of McKissack & McKissack. Any additional information that becomes available concerning this Site or system should be provided to Haley & Aldrich so that any further recommendations may be reviewed and modified as necessary. Haley & Aldrich is not responsible for the subsequent separation, detachment, or partial use of this document. No warranty or guarantee, whether expressed or implied, is made with respect to the recommendations expressed in this report. Any reliance on this report by a third party shall be at such party's sole risk.

We appreciate the opportunity to provide consulting services on this project. Please do not hesitate to call if you have any questions or comments.

Sincerely yours,
HALEY & ALDRICH. INC.

Dana L. Kennard
Assistant Project Manager

David A. Schoenwolf, P.E.
Principal Consultant | Senior Vice President

Attachments:

- Table 1 – Summary of Soil Sample Analytical Results
- Table 2 – Summary of Groundwater Sample Analytical Results
- Table 3 – Order of Magnitude Soil Remediation Costs
- Figure 1 – Site Locus
- Figure 2 – Site Plan and Sample Locations
- Appendix A – Boring Logs
- Appendix B – Laboratory Analytical Reports

References

1. Haley & Aldrich, Inc., 2013a. Report on ASTM Phase I Environmental Site Assessment, Potomac Avenue & 1st Street SW, Washington, DC. 30 August.

2. Haley & Aldrich, Inc., 2013b. Report on ASTM Phase I Environmental Site Assessment with Limited Phase II Subsurface Sampling, EIN Property at Square 0605, Lot 0007, 1712 2nd Street, SW Washington, D.C. 23 October.