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PHASE II SOIL INVESTIGATION REPORT
VOLUNTARY CLEANUP PROGRAM
DISTRICT OF COLUMBIA PARCEL AT BUZZARD POINT, SQUARE 0661, LOT 0800
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 Investigation Report
Voluntary Cleanup Program
District of Columbia Parcel at Buzzard Point, Square 0661, Lot 0800
Washington, D.C.

Ladies and Gentlemen:

Haley & Aldrich, Inc., (Haley & Aldrich) prepared this Phase II Soil Investigation Report (Phase II) for the District of Columbia (D.C.) parcel at Buzzard Point located in Washington, D.C. ([Site]; Figure 1). The objective of this Phase II was to obtain additional data associated with the recognized environmental conditions (RECs) identified in previous investigations to further evaluate the potential impact of chemicals in soil. The targeted RECs were identified in the "Report on ASTM Phase I Environmental Site Assessment and Limited Phase II Subsurface Sampling" prepared by Haley & Aldrich (Haley & Aldrich, 2014). 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 Phase II provide information to support the Cleanup Action Plan that will be prepared to supplement the application for Voluntary Cleanup Program prepared for the District of Columbia Department of General Services.

Background

The Site is used as a salt storage facility with a salt dome comprising a large portion of the Site. The Site is bound by Potomac Avenue, SW to the north, R Street, SW to the south, Half Street, SW to the east and 1st Street, SW to the west.

The Site is planned for redevelopment as part of the new D.C. United Soccer Stadium, though no design drawings have yet been prepared for its construction. 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 for the proposed stadium. The soil investigation considered this depth of excavation to assess soil disposition for foundation construction.

PREVIOUS INVESTIGATIONS

In 2013, Haley & Aldrich conducted a Phase I and limited Phase II environmental site assessment (ESA), that identified one suspect REC (i.e., potential petroleum impacts to soil from off-site sources;) summarized in the associated report (Haley & Aldrich, 2014). Soil and groundwater samples were also collected from one location shown in Figure 2 (GTW-661-800-1). Soil analytical results indicated that chemicals concentrations did not exceed soil screening levels; however; the sample depth (i.e., 15 to 20 feet bgs) was deeper than the targeted investigation depth of the upper 10 feet based on the proposed redevelopment.

SOIL SCREENING LEVELS

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).

As used in this Phase II, "soil screening levels" are the lower of the above screening levels. Soil 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.

Subsurface Investigation

Soil investigation activities were conducted at the Site to further evaluate the nature and extent of subsurface conditions in soil. These investigation activities were conducted on 9 July 2015 at the following areas of potential concern (AOPCs) shown in Figure 2:

- Historical boring location GTW-661-800-1: Samples were collected to investigate chemicals in shallow soil; and
- Western site coverage: Samples were collected from one location in the southwest corner of the Site to investigate chemicals in soil in the western portion of the Site.

The sample analyses at each location were selected based on the potential chemicals of concern associated with the REC identified in the Phase I ESA. Soil sample locations are shown in Figure 2.

Groundwater sampling at temporary well location GTW-661-800-1 will be conducted and the results evaluated under separate cover.

SOIL SAMPLING

Soil samples were collected to depths ranging from 10 to 15 feet bgs using a track-mounted direct-push drill rig. Each boring was continuously logged in accordance with the Unified Soil Classification System; boring logs are provided as Appendix A. Continuous soil cores were collected by driving a hydraulic percussive stainless steel sampling probe equipped with dedicated acetate tube liners. Soil cores were observed and visually documented for discoloration and screened for volatile organic compounds (VOCs) using a photoionization detector (PID). Soil samples were collected from approximately 1, 5, and 10 feet bgs; select depth intervals were adjusted to target indications of chemicals (e.g., visual or olfactory observations, elevated PID measurements). Samples were collected in laboratory-supplied jars, placed in a cooler with ice, and submitted to Alpha Analytical for analysis under standard chain of custody procedures.

Sampling equipment was decontaminated prior to sampling and between sample locations by washing with non-phosphate detergent (e.g., Alconox) solution, followed by rinsing with potable water, and then distilled water. Sampling personnel used disposable nitrile gloves during sampling and changed gloves between each sample location. Decontamination fluids were captured and placed in 55-gallon drums and disposed of off-Site as discussed below.

One field duplicate soil sample was collected for every 10 soil samples to evaluate sample homogeneity and laboratory accuracy. The field duplicates were collected, numbered, packaged, and sealed in the same manner as the primary samples. One equipment rinsate sample was collected at the end of each day of sampling and used to evaluate the effectiveness of the decontamination process. Trip blank samples accompanied each sample shipment submitted for VOC analysis to check for potential cross-contamination during shipment.

RESULTS

The following summarizes the sampling results in the previously described AOPCs.

Historical Sample Location GTW-661-800-1

The samples collected at approximately 15 to 20 feet bgs (GTW-661-800-1) did not have reported chemical concentrations that exceeded the soil screening levels; however at the request of the District Department of the Environment, additional samples were obtained in this area to help them further evaluate the Cleanup Action Plan that will be submitted as part of the Voluntary Cleanup Program. Five borings were therefore advanced and 15 samples collected in this area to investigate and obtain additional information regarding the extent of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), metals, polychlorinated biphenyls, and VOC concentrations in soil based on the chemicals of potential concern associated with the reported release of heating oil, gasoline, and diesel from the adjacent property.

A review of the analytical results of these samples indicated that one sample had reported diesel range total petroleum hydrocarbons (TPH-DRO) concentrations that exceeded the soil screening levels; no samples had reported PAH concentrations that exceeded the soil screening levels; and 11 samples had arsenic concentrations that exceeded the soil screening levels. Analytical results and chemicals that exceeded the soil screening levels are identified in Table 1. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

Western Site Coverage

One boring was advanced and three samples collected in this area to investigate TPH, PAH, and metals concentrations in soil based on the chemicals of concern associated with adjacent properties.

A review of the analytical results for these samples indicated that one sample had reported TPH-DRO concentrations that exceeded the soil screening levels; one sample had reported PAH concentrations that exceeded the soil screening levels; and three samples had arsenic concentrations that exceeded the soil screening levels. Analytical results and chemicals that exceeded the soil screening levels are identified in Table 1. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided as Appendix B.

Summary and Recommendations

In summary, soil samples were collected to evaluate and delineate the presence of chemicals at two AOPCs. The following is recommended:

- Prepare a Site-specific background metals evaluation;
- Prepare a soil management plan to guide the demolition environmental monitoring process; and
- Implement the soil management plan and provide environmental oversight during the preparatory foundation construction activities and ensure that the soil is properly segregated and disposed of off-Site.

Based on the available analytical results, soil remediation may be required for the protection of human health for the on-Site construction worker and future occupant and reduce the threat to groundwater quality. The potential order of magnitude for excavating soil at areas that exceeded the soil screening levels identified at the one on-Site AOPC range from $89,000 to $650,000. These costs and their associated assumptions are summarized in Table 2. The soil screening levels used to evaluate the impacts at the Site do not account for cumulative health risks. These costs also exclude the groundwater remediation/mitigation and/or vapor intrusion mitigation that may be required to reduce the threat to human health when constructing the stadium.

The potential order of magnitude costs for soil remediation are based on the available data (i.e., sample locations with chemicals in soil that exceed the soil screening levels), and an understanding that there is no time in the redevelopment schedule for additional delineation sampling, a background metals

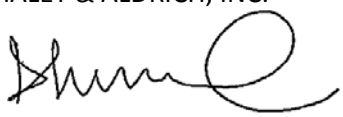
evaluation, or a human health risk assessment, which may affect the soil remediation feasibility and costs.

Limitations

All recommendations are based solely on existing Site conditions at the time of performance of services. Haley & Aldrich is unable to report on, or accurately predict events that may impact the Site following preparation of this document, whether naturally occurring 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 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.



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Attachments:

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

References

1. Haley & Aldrich, Inc., 2014. Report on ASTM Phase I Environmental Site Assessment with Limited Phase II Subsurface Sampling, District of Columbia Parcel at Buzzard Point, Square 661, Lot 0800, Washington, DC. 8 September.