

PHASE II SOIL INVESTIGATION REPORT
VOLUNTARY CLEANUP PROGRAM
SW LAND HOLDER, LLC, PARCEL AT BUZZARD POINT,
SQUARE 0607, LOT 0013
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
SW Land Holder, LLC, Parcel at Buzzard Point, Square 0607, Lot 0013
Washington, D.C.

Ladies and Gentlemen:

Haley & Aldrich, Inc., (Haley & Aldrich) prepared this Phase II Soil Investigation Report (Phase II) for the SW Land Holder, LLC, (Akridge) 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 comprised of a parking lot and a building used to store end-of-life passenger vehicles and a motorcycle. The Site is surrounded by S Street, SW to the north, 1st Street, SW to the east, T Street, SW to the south, and 2nd 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 of the proposed stadium. The Phase II considered this depth of excavation to assess soil disposition for foundation construction.

PREVIOUS INVESTIGATIONS

In 1990, Geomatrix, Inc., (Geomatrix) conducted a soil investigation and collected and submitted soil samples for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX), polychlorinated biphenyls (PCBs), and metals analysis (Geomatrix, 1990). Geomatrix concluded that TPH concentrations in soil were fairly well distributed throughout the Site at 0 to 2 feet bgs.

In 2005, Advantage Environmental Consultants, LLC, (AEC) conducted a Phase I ESA and identified three RECs: the historical use of the Site (i.e., coal storage yard, bulk fuel storage facility, and a vehicle fueling station), the adjacent Potomac Electric Power Company property (particularly leaking underground storage tank case #93-051), and the adjacent Super Savage, Inc., property). AEC also conducted a Phase II ESA concurrently with the Phase I and advanced soil borings in a general grid pattern throughout the Site, concentrating sample locations at a former underground storage tank (UST) area at the southern portion of the Site. AEC also installed two temporary monitoring wells for groundwater sample collection and analysis. Soil analytical results indicated that TPH, volatile organic compound (VOC), and PCB concentrations were below applicable screening criteria (AEC, 2005). Groundwater analytical results indicated that VOCs were above applicable screening criteria at one location (AEC, 2005).

In 2014, Haley & Aldrich conducted a Phase I and limited Phase II ESA that identified two RECs from the AEC Phase I ESA (i.e., shallow subsurface petroleum impacts in soil and chlorinated solvents in groundwater) as known RECs and identified the storage building floor drains and adjacent properties as two suspect RECs. During the limited Phase II, soil samples were collected from three targeted REC locations (boring locations GSS-607-13-1, GTW-607-13-2, and GSS-607-13-3); however, the storage building was inaccessible (Haley & Aldrich, 2014). Groundwater samples were also collected at two temporary monitoring wells (locations GTW-607-13-1 and GTW-607-13-2; Haley & Aldrich, 2014). Soil and groundwater sample locations are shown in Figure 2. Soil sample analytical results indicated that diesel range total petroleum hydrocarbons (TPH-DRO), arsenic, and polycyclic aromatic hydrocarbons (PAHs) concentrations were above applicable screening criteria (Haley & Aldrich, 2014). Groundwater analytical results indicated that VOC and TPH concentrations were below applicable screening criteria (Haley & Aldrich, 2014).

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 between 15 and 24 July 2015 to further evaluate the nature and extent of subsurface soil conditions. These activities were conducted at the following areas of potential concern (AOPCs) shown in Figure 2:

- Historical boring location GSS-607-13-1;
- Historical boring location GTW-607-13-2;
- Historical boring location GSS-607-13-3;
- The storage building area;
- Five former UST areas; and
- The southern Site coverage.

The sample analyses at each location were selected based on the chemicals that exceeded the soil screening levels and/or the chemicals of potential concern (COPCs) associated with the RECs identified during the Phase I ESA activities conducted by AEC and Haley & Aldrich. Soil sample locations are shown in Figure 2.

Groundwater sampling was also conducted at temporary monitoring well locations GTW-607-13-1 and GTW-607-13-2 but the results will be evaluated under separate cover. Laboratory analytical reports for these wells and other temporary wells sampled during this Phase II are provided as Appendix A.

SOIL SAMPLING

Soil samples were collected at depths ranging from 0 to 30 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 B. 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 documented visually for discoloration and screened for VOCs using a photoionization detector (PID). Soil samples were collected from approximately 1, 5, 10, 20, and 30 feet bgs; select depth intervals were adjusted to target indications of chemicals (e.g., visual or olfactory observations, elevated PID measurements). Deeper samples were not collected at some locations because of refusal or poor recovery, as indicated on the boring logs. 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 ten 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 rinse 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.

WASTE PROFILING AND DISPOSAL

Once the drilling was completed, investigation-derived waste soil, decontamination wash water, and purge water were contained on Site in 55-gallon drums and profiled for off-Site disposal by an appropriately-licensed subcontractor.

RESULTS

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

Historical Boring Location GSS-607-13-1

The sample collected at approximately 10 to 15 feet bgs from historical boring location GSS-607-13-1 had reported metals concentrations that exceeded soil screening levels.

Based on the historical results, nine borings were advanced to a depth of 30 feet and 37 samples were collected in this area to provide additional information regarding the extent of metals, PAH, TPH, and BTEX concentrations in soil.

A review of the analytical results of these samples indicated that 13 samples had a reported TPH-DRO concentration that exceeded the soil screening levels; no samples had reported PAH concentrations that exceeded the soil screening levels; and 15 samples had arsenic concentrations that exceeded the soil screening levels. Analytical results and chemicals that exceeded the soil screening levels are identified in Tables 1 and 2. Boring and sample locations that exceeded the soil screening levels are shown in Figure 2. Laboratory analytical reports are provided in Appendix A.

Historical Boring Location GTW-607-13-2

The samples collected at approximately 5 to 10 feet bgs from historical boring location GTW-607-13-2 had reported TPH-DRO, PAH, and arsenic concentrations that exceeded soil screening levels.

Based on the historical results, nine borings were advanced to a depth of 30 feet and 45 samples were collected in this area to provide additional information regarding the extent of TPH, PAH, and metals concentrations in soil.

A review of the analytical results of these samples indicated that 13 samples had reported TPH-DRO concentrations that exceeded the soil screening levels; five samples had reported PAH concentrations that exceeded the soil screening levels; and 15 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 in Appendix A.

Historical Boring Location GSS-607-13-3

The samples collected at approximately 0 to 2 feet bgs from historical boring location GSS-607-13-3 had reported TPH-DRO concentrations that exceeded soil screening levels.

Based on the historical results, nine borings were advanced to a depth of 30 feet and 44 samples were collected in this area to provide additional information regarding the extent of PAH and TPH concentrations in soil.

A review of the analytical results of these samples indicated that 21 samples had reported TPH-DRO concentrations that exceeded the soil screening levels and 15 samples had reported PAH 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 A.

Storage Building Area

Five borings targeting the floor drains were advanced within the storage building to a depth of 30 feet and 23 samples were collected to investigate TPH, PAH, and metals concentrations in soil based on the COPCs associated with the storage building and associated staining.

A review of the analytical data results for these samples indicated that 7 samples had reported TPH-DRO concentrations that exceeded the soil screening levels; 4 samples had reported PAH concentrations that exceeded the soil screening levels; and 21 samples had reported 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 A.

Five Former UST Areas

Twenty-three borings were advanced at the five former UST areas to a depth of 30 feet and 115 samples were collected to investigate metals, PAH, TPH, and BTEX concentrations in soil. Sample DP-105-SO-100-01 was also analyzed for VOCs based on the TPH-GRO results of 130 milligrams per kilogram.

A review of the analytical results of these samples indicated that 40 samples had reported TPH-DRO concentrations that exceeded the soil screening levels; 1 sample had a reported TPH-GRO concentration that exceeded the soil screening levels; 11 samples had reported PAH concentrations that exceeded the

soil screening levels; 23 samples had reported arsenic concentrations that exceeded the soil screening levels; and 1 sample had a reported lead concentration that exceeded the soil screening level. Analytical results and chemicals that exceeded the soil screening levels are identified in Tables 1 and 2. Boring and sample locations that exceed the soil screening levels are shown in Figure 1. Laboratory analytical reports are provided as Appendix A.

Southern Site Coverage

One boring was advanced to a depth of 30 feet and five samples were collected in the southern portion of the Site to investigate PAH and TPH concentrations in soil.

A review of the analytical results of these samples indicated that one sample had reported TPH-DRO concentration that exceeded the soil screening levels, and no samples had reported PAH 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 A.

Summary and Recommendations

In summary, soil samples were collected to evaluate and delineate the presence of chemicals at the five identified RECs associated with the Site. The following is recommended:

- Prepare a Site-specific background metals evaluation;
- Prepare a soil management plan to guide the foundation excavation 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 analytical results collected to date, soil remediation may be required for the protection of human health for the on-Site construction worker and future occupant and to 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 six on-Site AOPCs range from \$450,000 to \$7,100,000. These costs and their associated assumptions are summarized in Table 3. The soil screening levels used to evaluate impacts at the Site do not account for cumulative health risks. These costs also exclude groundwater 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 cost.

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.



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 – Metals, PAHs, PCBs, and TPH
- Table 2 – Summary of Groundwater Sample Analytical Results – VOCs
- Table 3 – Order of Magnitude Soil Remediation Costs
- Figure 1 – Site Locus
- Figure 2 – Sample Locations and Exceedances
- Appendix A – Laboratory Analytical Reports
- Appendix B – Boring Logs

References

1. Advantage Environmental Consultants, LLC, 2005b. Phase II Environmental Site Assessment, Buzzard Point, 2nd Street and V Street, SW, Washington, DC 20024. 10 June.
2. Geomatrix, Inc., 1990. Assessment of Buzzard Point Properties.
3. Haley & Aldrich, Inc., 2014. Report on ASTM Phase I Environmental Site Assessment and Limited Phase II Subsurface Sampling, Akridge Parcel at Buzzard Point, Square 0607, Lot 0013 SW Washington, D.C. 08 January.