



# MDE Voluntary Cleanup Program Proposed Phase II ESA Work Plan Presentation

City of Annapolis  
932 and 935 Spa Road, Annapolis, Maryland

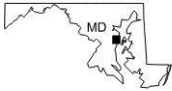
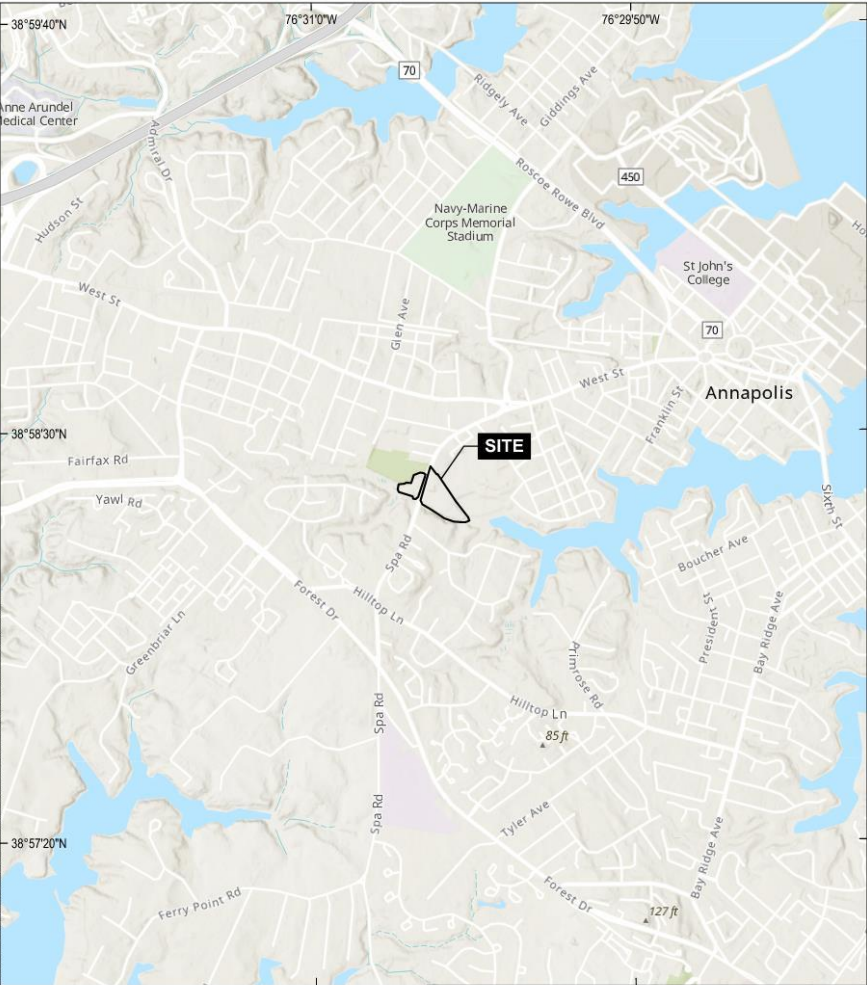
6 May 2024



## Next Steps

- Submit VCP application to MDE with Phase II ESA work plan June 2024
- Implement MDE-approved work plan Summer 2024
- Ph II ESA Report Fall 2024
- Secure Brownfield Grant Funding Winter 2024
- Interim Corrective Action Plan for Weems Whalen Field Winter 2024
- Remedial Action Plan Winter 2024
- Implementation of RAP integrated with redevelopment

# 932 & 935 Spa Road



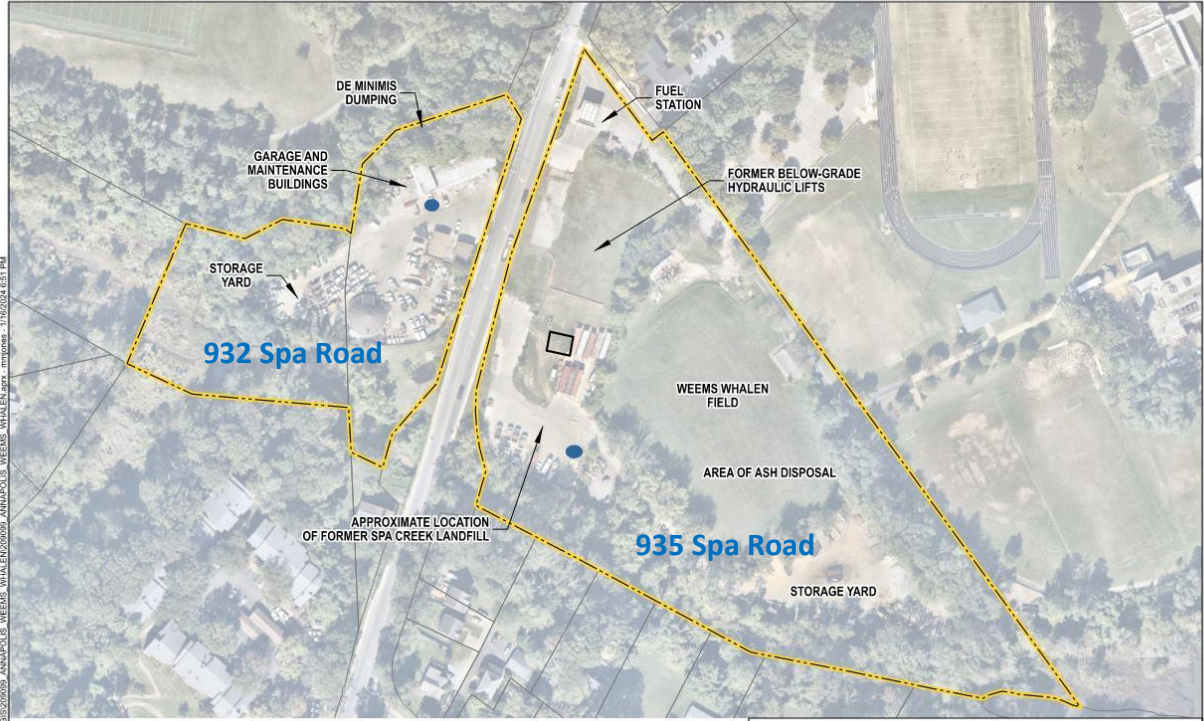
**HALEY  
ALDRICH**

932 & 935 SPA ROAD  
ANNAPOLIS, MARYLAND

PROJECT LOCATION

APPROXIMATE SCALE: 1 IN = 2000 FT  
DECEMBER 2023

FIGURE 1



**LEGEND**

- FORMER INCINERATOR (APPROXIMATE)
- SITE BOUNDARY
- REPORTED OIL/WATER SEPARATOR
- PARCEL BOUNDARY

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. PARCEL DATA SOURCE: CITY OF ANNAPOLIS GIS
3. AERIAL IMAGERY SOURCE: NEARMAP, 12 OCTOBER 2023



0 90 180  
SCALE IN FEET

**HALEY  
ALDRICH**

932 & 935 SPA ROAD  
ANNAPOLIS, MARYLAND

SITE PLAN

JANUARY 2024

FIGURE 2

# Subject Property

- The subject property consists of three parcels totaling approximately 18.74 acres located at 935 Spa Road and 932 Spa Road in Annapolis, Maryland.
- The subject property includes one approximately 1.77-acre parcel (0206000090091503) and one approximately 1.97-acre parcel (UNK13491) located west of Spa Road, and one approximately 15-acre parcel (020600001407408) located east of Spa Road that extends east toward the headwaters of Spa Creek.



# Current Use of Subject Property (Western Portion):

- The western portion of the subject property (932 Spa Road) currently consists of a three-bay automotive garage for Public Works vehicle maintenance, a salt dome for salt storage, trailers, and a storage yard for Public Works materials.



# Current Use of Subject Property (Eastern Portion):

- Currently, the eastern portion of the subject property (935 Spa Road) consists of the formerly used Weems Whalen athletic field with an associated vacant concessions building, a fuel pump for Department of Public Works vehicles, a paved parking area for Public Works vehicles, and a storage yard used by Public Works.



# Previous Investigations Summary

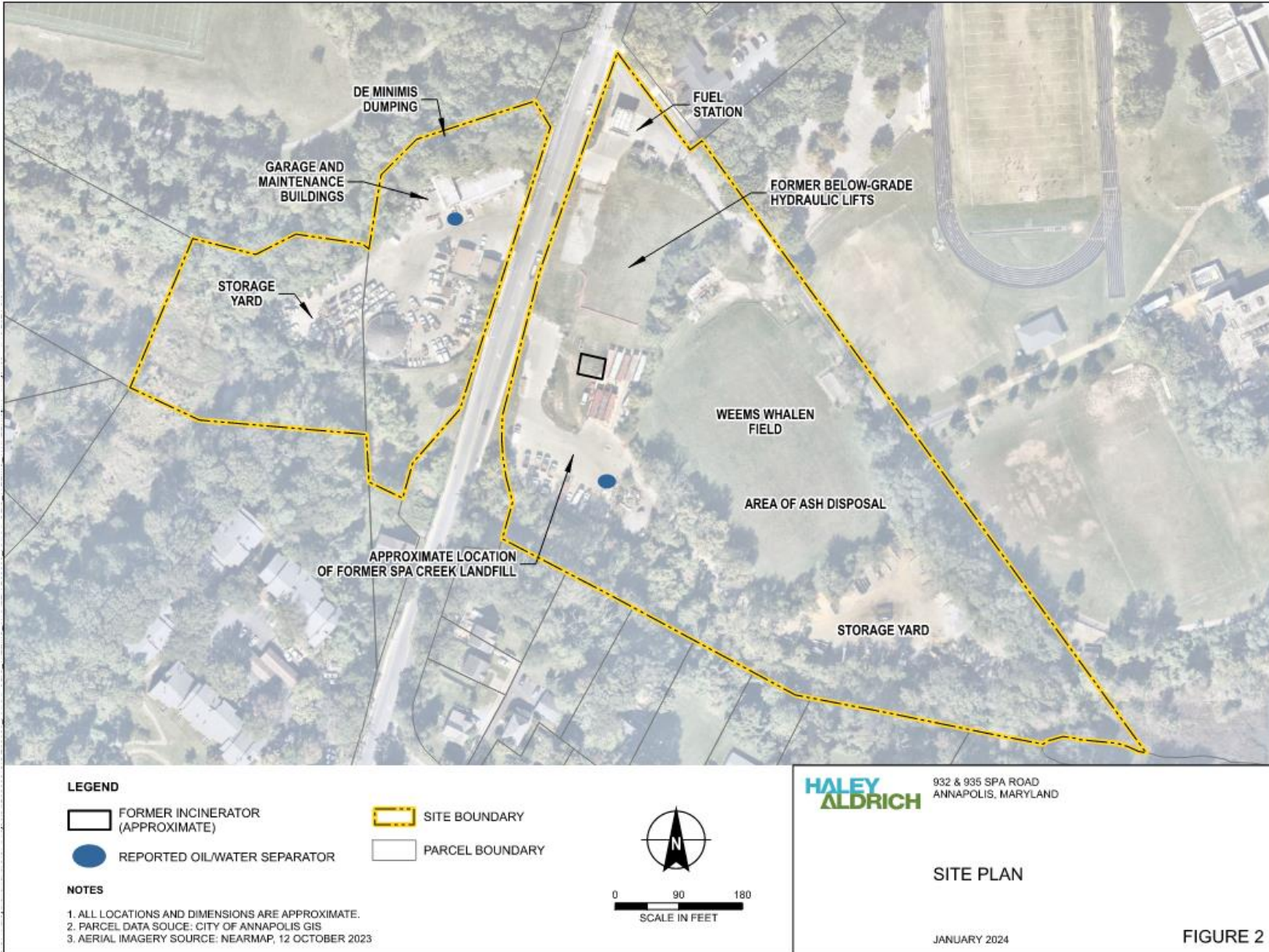
- Soils:
  - 105 soil samples total collected on eastern parcel with 96 located on the athletic field
  - Three soil samples total collected on western parcel
  - Constituents analyzed: VOCs, SVOCs, PAHs, Metals, TPH-GRO/DRO, Dioxins and Furans, PCBs, and Total Cyanide
  - **Weems Whalen Field: two arsenic hotspots (98.3 mg/kg and 44.2 mg/kg) in two locations; total chromium detected at maximum concentration of 101 mg/kg; concentrations of TPH-DRO, PAHs, and other metals do not exceed Residential Cleanup Standards**
  - As, Cd, Cr VI, Cu, Pb, Hg, and Ni exceed Residential Cleanup Standards on the subject property
  - Geotechnical investigations revealed incinerator waste on athletic field at depths of 4 to 13 feet bgs

## *Phase I Environmental Site Assessment, Haley & Aldrich, January 2024*

- Completed by Haley & Aldrich for the City of Annapolis Department of Public Works.
- The Phase I identified the following RECs:
  - **REC #1:** Former Landfill and Incinerator Facility with On-Site Disposal
  - **REC #2:** Historical and Current Subject Property Operations
    - Identified areas of concern include:
      - Former and current USTs
      - Former hydraulic lifts
      - Storage yards
      - Oil/water separators
      - Stormwater management



# Phase I ESA – Site Plan



# Public Works Arsenic Investigation, Hillis-Carnes Engineering Associates, Inc., May 2023



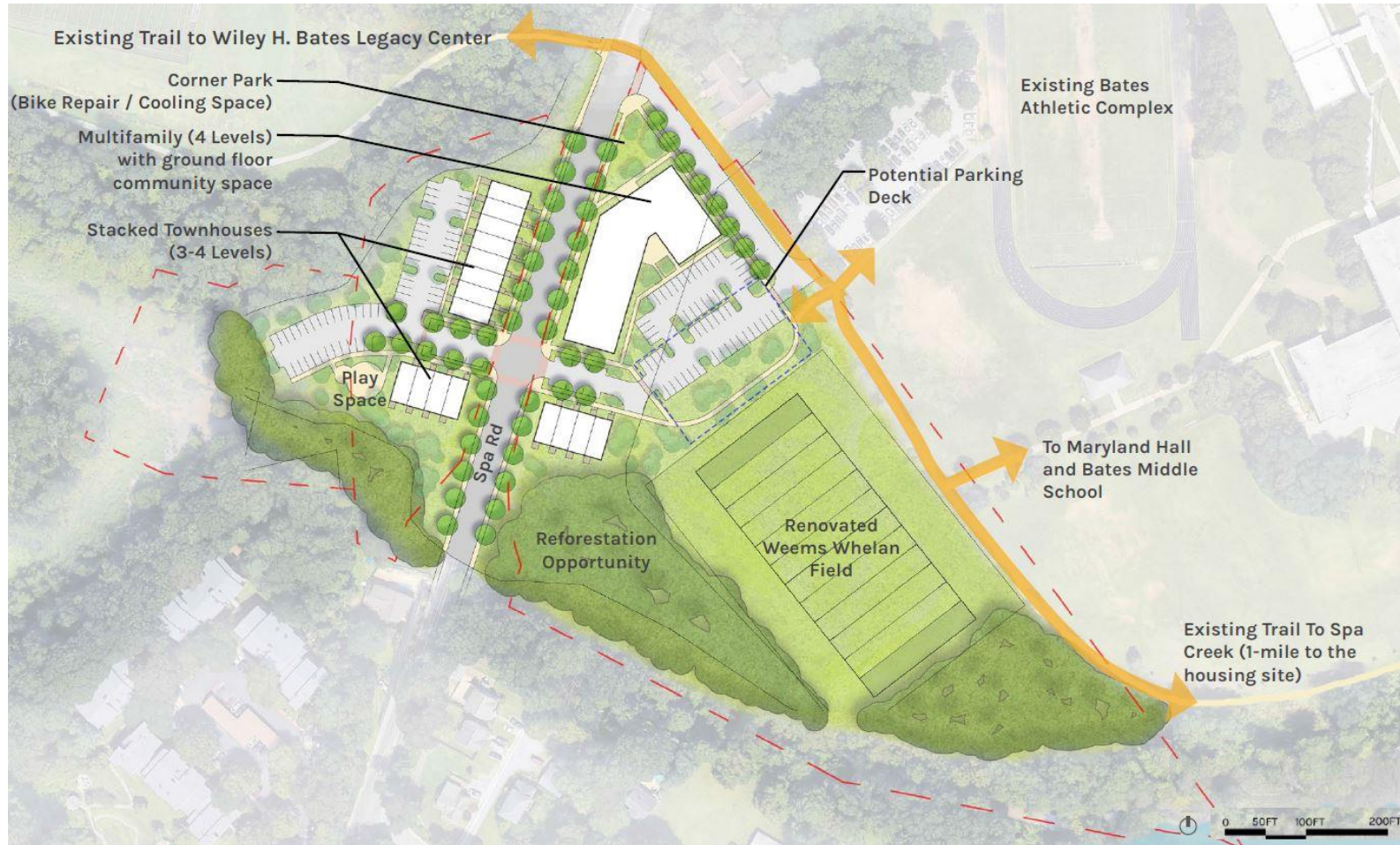
Locations Identified in Red Exceeded at Both the Shallow and Deep Intervals

Locations Identified in Green Exceeded in Only the Shallow Interval

Locations Identified in Blue Exceeded in Only the Deep Interval

# Planned future use (preliminary)

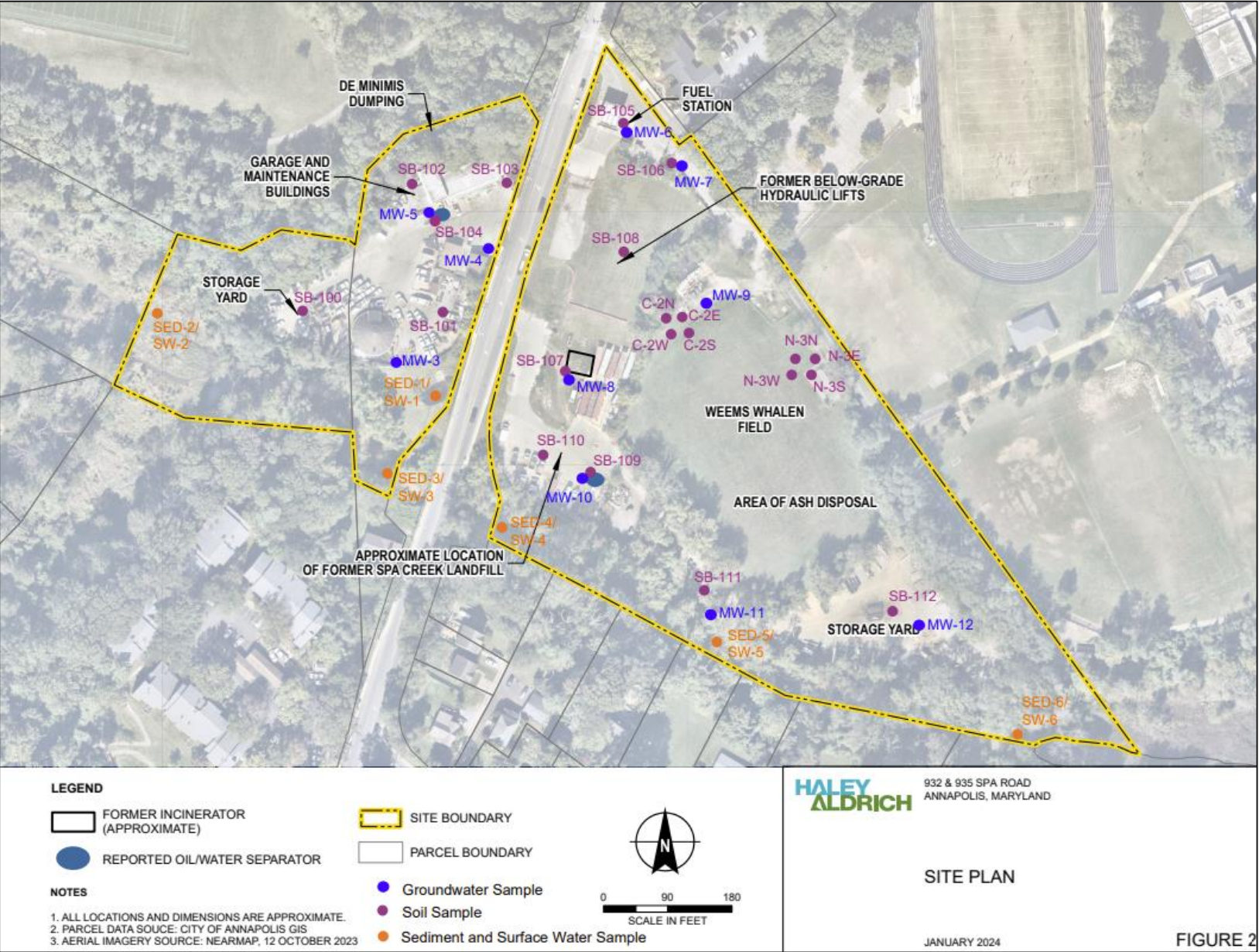
- Multi-family residential, multi-purpose athletic field



## Anticipated land use controls:

- Tier 1B residential land use and Tier 4 public recreation medium use
- Groundwater use prohibition
- 932 & 935 Spa Road
  - Excavation activities to follow site-specific health and safety plan (HASP)
  - Ground disturbance to follow soil management plan (SMP)
  - Ground conditions maintained in accordance with site care plan
  - Vapor barrier and sub-slab depressurization system (SSDS) (if warranted) for all future construction/occupied buildings

# Proposed Phase II Investigation – Proposed Sampling Locations



# BACKGROUND - Technical

## Site Background- 1910s - 1949

- Since at least the mid-1910s until 1934, the southwestern corner of the eastern portion of the subject property was used as a landfill.
- In 1934, an incinerator facility was constructed in the vicinity of the former landfill and was in operation until 1949.

## Site Background- 1949 - Present

- In 1949, the City of Annapolis leased the eastern parcel of the subject property to the Annapolis Athletic Association to develop an athletic field. Weems Whalen athletic field was completed in 1954 and was in use until approximately 2021.
- The western parcel was undeveloped until approximately 1970 when it was improved with a Public Works automotive garage.
- Automotive garages and offices were present on the eastern portion of the subject property from approximately 1970 until approximately 2018, when the buildings were demolished.

# Previous Investigations 1993-2023

- *Groundwater Quality Assessment for Fuel Oil UST*, Mark Schultz Associates, April 1993
- *Phase I & II Environmental Site Assessment*, Quality Environmental Solutions, September 2002
- *Report of Subsurface Exploration, Laboratory Testing, and Geotechnical Engineering Analyses*, ECS, February 2017
- *Weems Whalen Field Borings*, Hillis-Carnes Engineering Associates, Inc., April 2019
- *Limited Subsurface Investigation*, Hillis-Carnes Engineering Associates, Inc., August 2019
- *Limited Subsurface Investigation – Cover Soil*, Hillis-Carnes Engineering Associates, Inc., November 2019
- *Public Works Methane Study*, Hillis-Carnes Engineering Associates, Inc., March 2020
- *Public Works Comprehensive Cover Soil Investigation*, Hillis-Carnes Engineering Associates, Inc., February 2022
- *Public Works Arsenic Investigation*, Hillis-Carnes Engineering Associates, Inc., May 2023



# Previous Investigations Summary (cont.)

- Groundwater:
  - Two groundwater samples were collected from the vicinity of the former UST in association with tank removal
  - Constituents analyzed: naphthalene and TPH-DRO
  - Concentrations did not exceed Residential Groundwater Cleanup Standards
  - Groundwater encountered at approximately 20 feet bgs
- Soil Gas:
  - 20 locations throughout athletic field
  - Constituents analyzed: Methane field analysis
  - Conclusions:
    - Non –Detect for all locations
- Surface Water & Sediment:
  - No past investigations

# Groundwater Quality Assessment for Fuel Oil UST, Mark Schultz Associates, April 1993

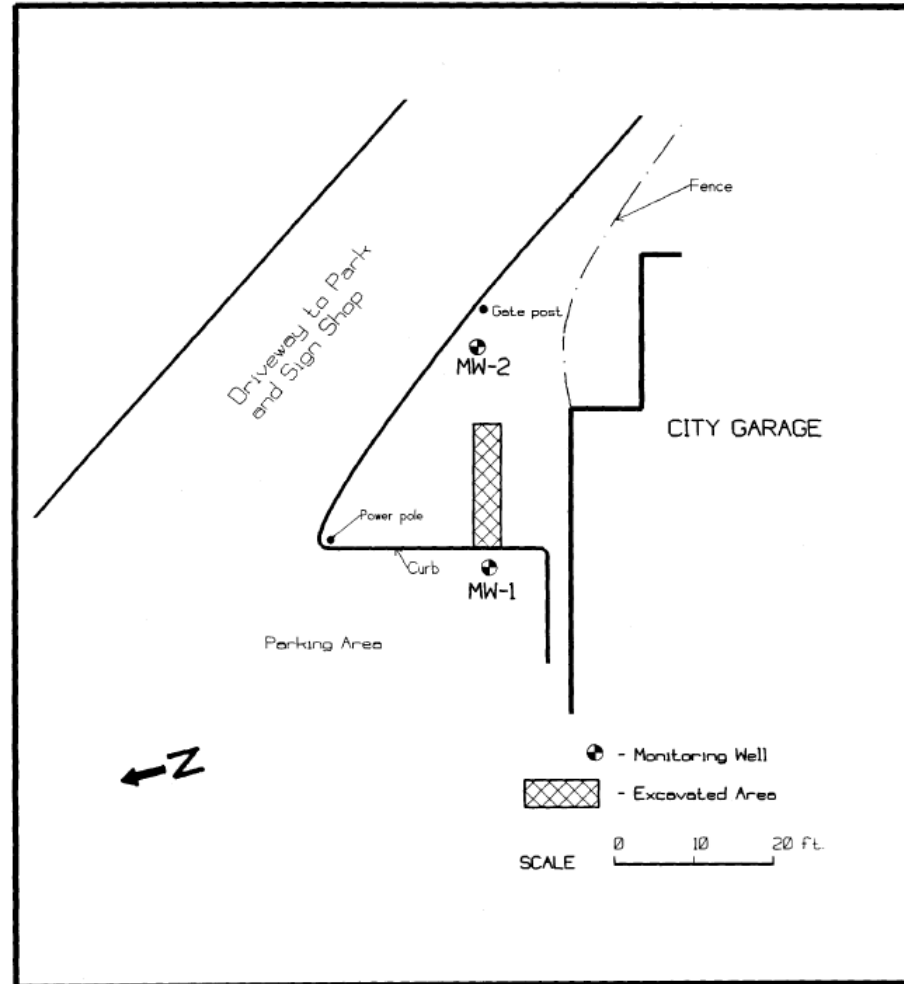
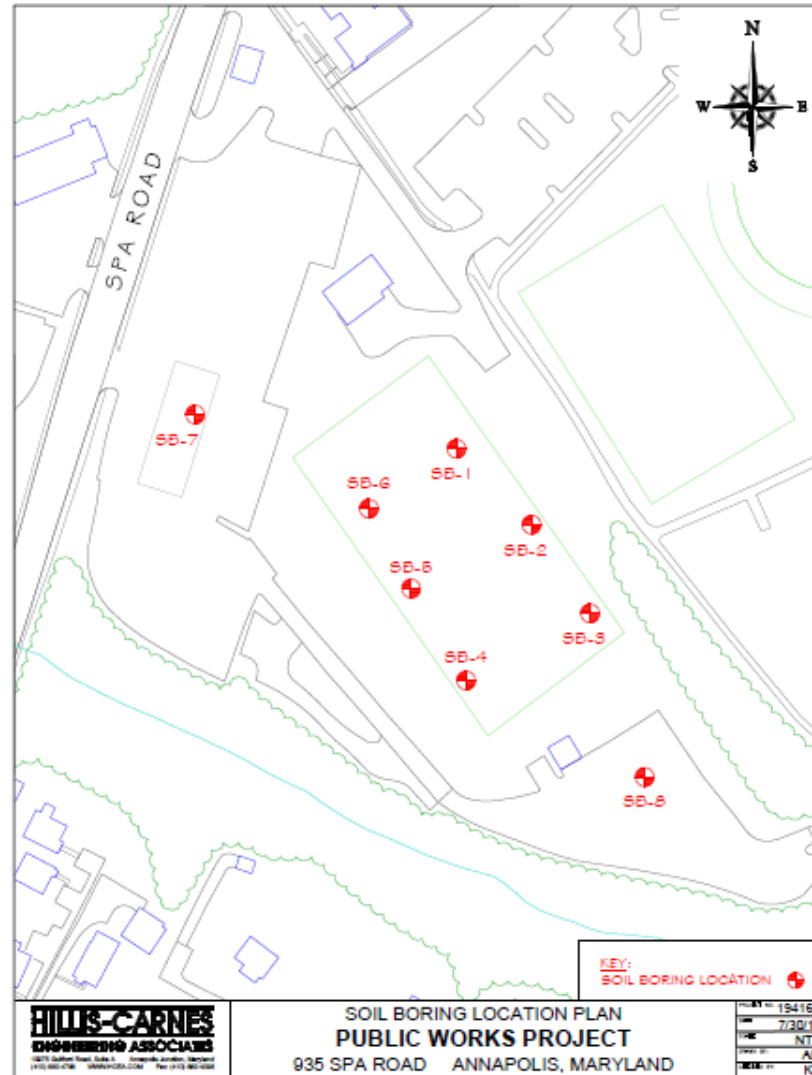


Figure 2

Monitoring Well Locations

Prepared by:  
Mark Schultz Assoc.  
Annapolis, MD

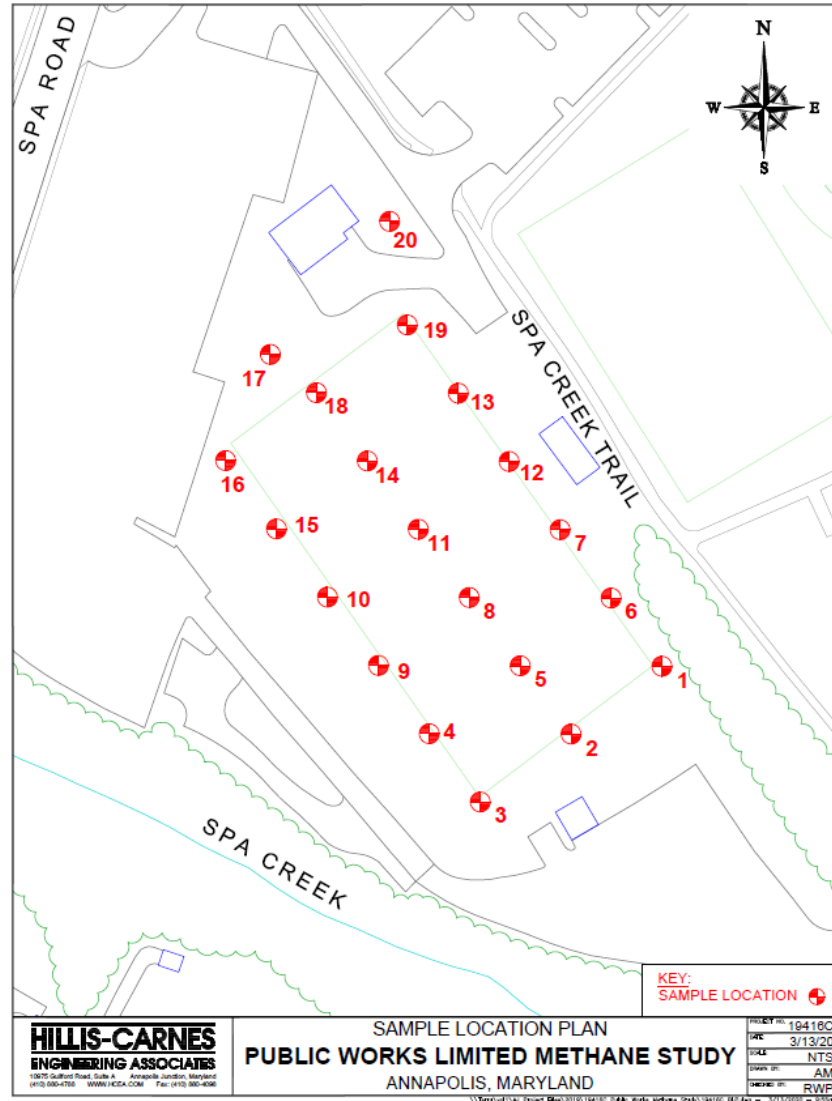
# Limited Subsurface Investigation, Hillis-Carnes Engineering Associates, Inc., August 2019



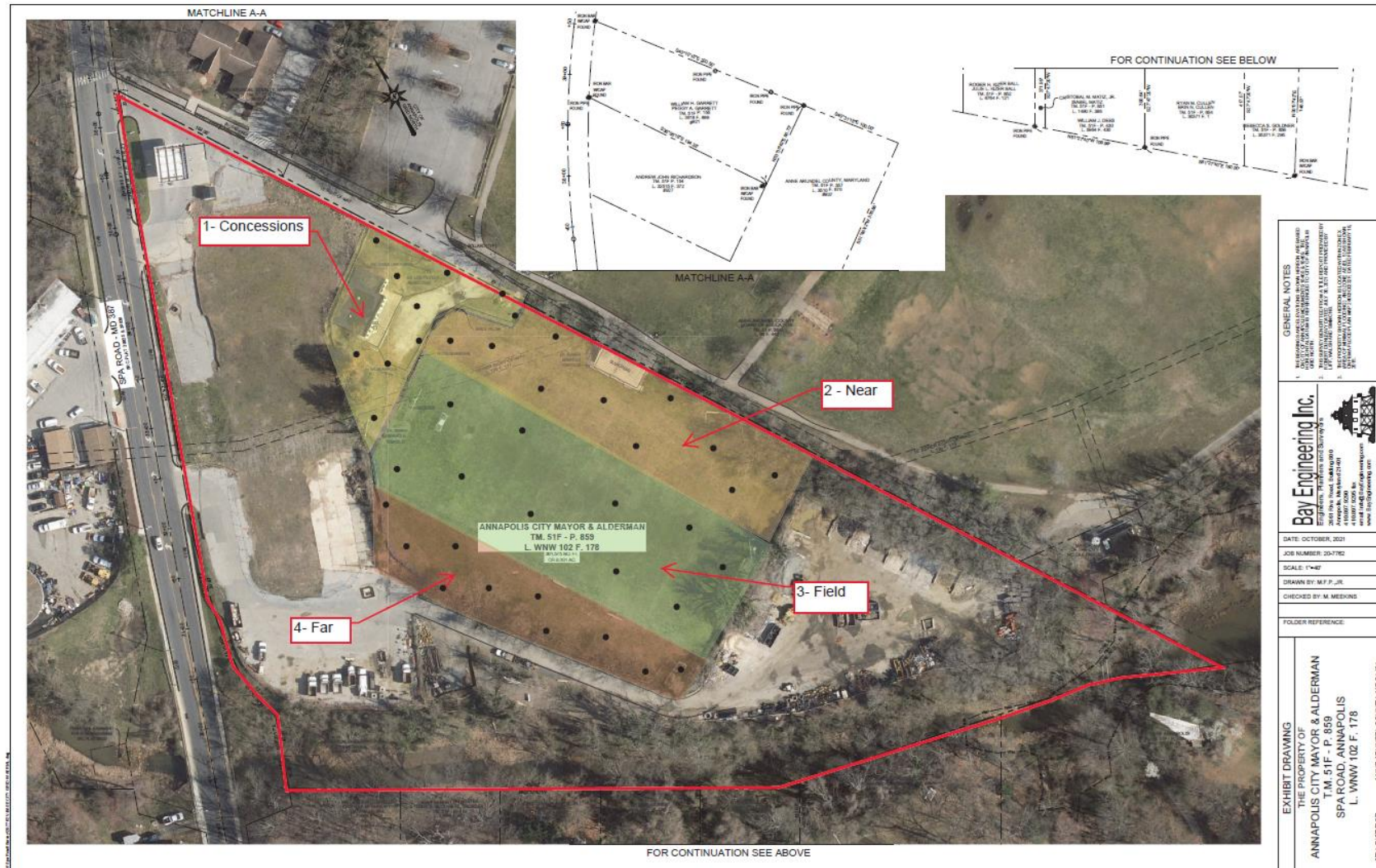
# Limited Subsurface Investigation – Cover Soil, Hillis-Carnes Engineering Associates, Inc., November 2019



# Public Works Methane Study, Hillis-Carnes Engineering Associates, Inc., March 2020



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# Phase II Work Plan – 932 Spa Road (West side)

AOC/REC	Sample Media	Proposed Sampling Plan	Sample Location ID
Three bay automotive garage	Groundwater	Address with site-wide groundwater results.	--
Salt Dome	Groundwater & Surface Water	Address potential to impact off-site surface waters with site-wide groundwater results.	--
Storage Yard	Soil	Drill two locations in storage yard and submit samples from 0 to 1 foot and 4 to 5 foot or worst case depth based on screening with a PID for TCL VOCs, TCL SVOCs, and PPL Metals.	SB-100, SB-101
Current and former ASTs	Soil	Drill one soil boring adjacent 1,000-gal AST and submit soil samples from 0 to 1 foot and 4 to 5 foot interval or worst case sample based on screening with a PID for TCL VOCs, SVOCs and PPL Metals.	SB-102
Former 550-gal Heating Oil UST	Soil	Drill one soil boring and submit sample from 0 to 1 foot and 4 to 5 foot or worst case depth based on screening with a PID for PAHs and PPL Metals.	SB-103

# Phase II Work Plan – 932 Spa Road (West Side)

AOC/REC	Sample Media	Proposed Sampling Plan	Sample Location ID
On-site sewer system	Soil & Surface Water/Sediment	Drill one soil boring at separator and submit soil sample from 4 to 5 foot interval or worst case sample based on bottom elevation of separator for screening with a PID for TCL VOCs, TCL SVOCs and PPL Metals. Collect surface water and sediment samples from the outfall pond and submit for analysis of TCL VOCs, TCL SVOCs, and PPL Metals.	SB-104, SED-1/SW-1 (Outfall)
Site-Wide Groundwater	Groundwater	Install 3 monitoring wells - at separator and two downgradient. Sample all wells for TCL VOCs, TCL SVOCs and total and dissolved PPL Metals.	MW-3, MW-4, MW-5
Spa Creek	Surface Water/Sediment	Collect shallow 0 to 0.5 foot sediment to target biotic zone, and surface water samples at the western property line and furthest downstream location on the property for TCL SVOCs and PPL metals.	SED-2/SW-2, SED-3/SW-3
Speciation for Elemental Mercury and Hexavalent Chromium	Soil	Additional soil samples may be submitted for speciation of elemental mercury and hexavalent chromium depending on the soil analytical results.	TBD
Vapor Intrusion	Soil Vapor	Up to three soil vapor samples may be submitted for analysis of TCL VOCs depending on the soil and groundwater results.	TBD



# Phase II Work Plan – 935 Spa Road (East Side)

AOC/REC	Sample Media	Proposed Sampling Plan	Sample Location ID
Current 10,000-gal Gasoline UST	Soil & Groundwater	Drill one soil boring and submit soil sample from worst case sample depth based on screening with a PID for TCL VOCs and PAHs. Collect one groundwater sample on downgradient side of tanks and submit for analysis of TCL VOCs and PAHs.	SB-105, MW-6
Current 10,000-gal Diesel UST			
Former 1,500-gal Heating Oil UST	Soil & Groundwater	Address with site-wide groundwater results.	--
Former 1,500-gal Fuel Oil UST	Soil & Groundwater	Drill one soil boring and submit soil sample from 4 to 5 foot interval or worst case sample based on screening with a PID for TCL VOCs and PAHs. Address with site-wide groundwater results.	SB-106
Former garage service bay drains	Soil	Drill one soil boring and submit soil samples from 0 to 1 foot and 4 to 5 foot interval or worst case sample based on screening with a PID for TCL VOCs, SVOCs and PPL Metals.	SB-107
Former automotive garage and hydraulic lifts.	Soil	Drill one soil boring and submit soil sample from 0 to 1 foot and 4 to 5 foot interval, or worst case sample based on screening with a PID for TCL VOCs and PAHs .	SB-108

# Phase II Work Plan – 935 Spa Road (East Side)

AOC/REC	Sample Media	Proposed Sampling Plan	Sample Location ID
Oil Water Separator	Soil	Drill one soil boring and submit soil samples from 0 to 1 foot and 4 to 5 foot interval or worst case sample based on screening with a PID for TCL VOCs, SVOCs and PPL Metals.	SB-109
Former property use as a landfill	Groundwater	Address with site-wide groundwater results.	--
Athletic Field Cover Soils	Soil	Delineate horizontal and vertical extent of arsenic at hotspots C-2 (concessions stand) and N-3 (near field). Collect samples 0 to 1 foot, 1.0 to 2.0 foot, 2.0 to 3.0 foot samples at four cardinal directions at each area and analyze for arsenic.	C-2N, C-2S, C-2E, C-2W, N-3N, N-3S, N-3E, N-3W
Former incinerator building.	Soil	Drill one soil boring and submit soil samples from 0 to 1 foot and 4 to 5 foot interval or worst case sample based on screening with a PID for TCL VOCs, SVOCs and PPL Metals.	SB-110
Former outdoor storage area.	Soil & Groundwater	Drill one soil boring in eastern and western storage yards to provide spatial coverage. Submit soil sample from 0 to 1 foot and 4 to 5 foot interval, or worst case sample based on screening with a PID for TCL VOCs, TCL SVOCs and PPL metals. Otherwise address with site-wide groundwater results.	SB-111, SB-112
Former fuel pump	Groundwater	Address with site-wide groundwater results.	--

# Phase II Work Plan – 935 Spa Road (East Side)

AOC/REC	Sample Media	Proposed Sampling Plan	Sample Location ID
Concessions building	Groundwater	Address with site-wide groundwater results.	--
Site-Wide Groundwater	Groundwater	Install 6 monitoring wells around perimeter of the facility and former landfill. Sample all wells for TCL VOCs, TCL SVOCs, total and dissolved PPL metals.	MW-7, MW-8, MW-9, MW-10, MW-11, MW-12
Spa Creek	Surface Water/Sediment	Collect shallow sediment and surface water samples at the western property line, mid-point and furthest downstream location on the property for TCL SVOCs and PPL metals. Sediment samples limited to 0-0.5 feet to target biotic zone.	SED-4/SW-4, SED-5/SW-5, SED-6/SW-6
Speciation for Elemental Mercury and Hexavalent Chromium	Soil	If results exceed MDE's direct contact standards for residential land use and MDE's Anticipated Typical Concentrations for this area of Maryland up to a maximum of three samples will be submitted for analysis of elemental mercury and/or hexavalent chromium.	TBD
Vapor Intrusion	Soil Vapor	Up to three soil vapor samples may be submitted for analysis of TCL VOCs depending on the soil and groundwater results.	TBD