Mr. Jason Pelton
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ENVIRONMENT

Subject:
Supplemental Phase IV Work Plan for Delineation of VOCs in Soil, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Date:
May 1, 2019

Contact:
David Stern

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Our ref:
NYNGOC19.3702

Dear Mr. Pelton:

Arcadis of New York, Inc. (Arcadis) has prepared this Supplemental Work Plan on behalf of Northrop Grumman Systems Corporation (Northrop Grumman) to describe the proposed work that will be implemented to refine the delineation of total volatile organic compound (TVOC) concentrations in soil exceeding10 milligrams per kilogram (mg/kg) in the northern and northeastern portions of the ballfield portion of the Bethpage Community Park, Bethpage, New York (Site). The borings described herein supplement the Phase IV soil boring program, as described in the Work Plan for Delineation of Perched LNAPL and to Supplement the Delineation of VOCs in Soil, dated August 3, 2018. Pre-design investigations performed between 2014 and 2017, along with the 2018 investigation, have delineated TVOC concentrations in soil exceeding 10 mg/kg, with the exception of the following locations where TVOC concentrations exceed 10 mg/kg: Soil Borings LPZ-5 (40–42 feet below land surface (ft bls)), LIF-HPT-20 (46-48 ft bls) and nS-8-18 (48 ft bls). Based on the above results, the NYSDEC recommended the drilling/sampling of four additional step-out borings (maximum of 2 borings per area), analysis of soil samples for VOCs, and submittal of the findings for their review. The scope of work and schedule are provided below. The proposed boring locations are shown on **Figure 1**.

PROPOSED SCOPE OF WORK

Additional delineation of TVOCs in soils will consist the following:

- Drilling of a maximum of two (2) step-out borings from each of the previously completed soil boring locations (i.e., LPZ-5, LIF-HPT-20 and nS-8-18). As shown on **Figure 1**, a total of 5 soil borings will be drilled to the depths listed below.

Completed Soil Boring Locations	Proposed Soil Boring IDs	Proposed Soil Sampling Intervals (ft bls)
LPZ-5	nQ-6-19	36-38, 38-40, 40-42, 42-44, 44-46, 46-48, 48-50, 50-52
LPZ-5	R-6-19	36-38, 38-40, 40-42, 42-44, 44-46, 46-48, 48-50, 50-52
nS-8-18	nS-7-19	36-38, 38-40, 40-42, 42-44, 44-46, 46-48, 48-50, 50-52
LIF-HPT-20	nT-11-19	40-42, 42-44, 44-46, 46-48, 48-50, 50-52, 52-54
LIF-HPT-20	T-12-19	40-42, 42-44, 44-46, 46-48, 48-50, 50-52, 52-54

- Soil borings will be approximately 4 inches in diameter and will be drilled utilizing Sonic rig. Soil cores will be collected from the sample intervals identified in the table above and will be screened in the field using a photo-ionization detector (PID). Upon completion, the borings will be grouted or backfilled with clean sand from the bottom up to land surface, with paved surfaces restored with cold patch asphalt.

- A total of 50 soil samples, including QA/QC samples will be collected from the intervals identified in the table above.

- Soil samples collected will be submitted for laboratory analysis will be sent to a New York State Department of Health (NYSDOH) accredited laboratory for the analysis of Target Compound List (TCL) VOCs under 24-hour turnaround time.

- Sample analyses will follow the NYSDEC Analytical Services Protocol (ASP) and will include quality assurance/quality control (QA/QC) samples consisting of trip blanks, equipment blanks, and field duplicate samples, in accordance with the NYSDEC-approved Quality Assurance Project Plan (QAPP).

- Analytical results will be reported using NYSDEC ASP Category B data deliverables.

- Data obtained from the analytical laboratory will be validated in accordance with the QAPP.

- The existing Earth Volumetric Studio (EVS) generated model displaying kriging of the total VOC concentrations will be updated with results of the proposed soil sampling results.

- Validated data will be submitted as part of the LNAPL Investigation and Supplemental VOC Delineation Report (under preparation).

FIELD PROGRAM LOGISTICS

Arcadis will adhere to the provisions of access agreed to between Northrop Grumman and the Town of Oyster Bay (Town) for field activities performed at the Site and will coordinate with the Town during the planning and performance of the work.

Locations will be marked out in the field prior to commencing intrusive activities. Subsurface utilities will be cleared using a minimum of three lines of evidence (e.g., One Call, soft dig, review of utility maps and previous geophysical survey data, site inspection) in accordance with the existing site-specific health and safety plan (HASP). The boring locations will also be cleared of utilities to a depth of 5 feet ft bls using soft dig techniques (e.g., hand digging, hand auger, etc.).

It is anticipated that the investigation program described above will be performed as a single mobilization and sampling event. The drilling operations will be overseen continuously by an Arcadis field geologist. Sample collection, coordination with the analytical laboratory and sample shipment, and sample logging will be conducted by Arcadis personnel. Drilling locations may be adjusted in the field based on access restrictions or the presence of utilities. Community air monitoring will be conducted continuously during working hours in accordance with the NYSDEC-approved Community Air Monitoring Plan.

Investigation-derived waste (IDW) management, equipment decontamination, and site control will be performed consistent with previous Site work. Soil cuttings and other IDW (e.g., PPE, decontamination water, etc.) will be segregated by waste type and placed in appropriate waste containers (e.g., Department of Transportation [DOT]-approved 55-gallon steel drums). The drums of wastes generated during the activities will be temporarily stored at a secure location on Northrop Grumman property until disposal. IDW (e.g., drill cuttings) will be analyzed for total and toxicity characteristic leaching procedure (TCLP) VOCs, SVOCs, RCRA metals, pesticides, and RCRA characteristics, plus other analytes as may be required by the disposal facility. Since PCBs are not considered as contaminants of concern (COCs) at the depth interval (i.e. 35-54ft bls) proposed for this investigation, PCB will not be analyzed as part of IDW characterization. Waste characterization results will be used to develop waste profiles for disposal of IDW.

ESTIMATED SCHEDULE

Northrop Grumman is coordinating access with the Town of Oyster Bay and we anticipate commencing non-intrusive investigation activities on May 3, 2019, with instrusive work planned for the following week. Field work is anticipated to require 5 days (actual duration contingent on findings) to complete and will be performed Monday to Friday from 7 a.m. to 4 p.m. (work will not be conducted on-Site during Town holidays).

The investigation results will be provided in a summary report at the end of the investigation program and after the data have been evaluated and validated.

Please contact me if you have any questions or need additional information.

Sincerely,

Arcadis of New York, Inc.

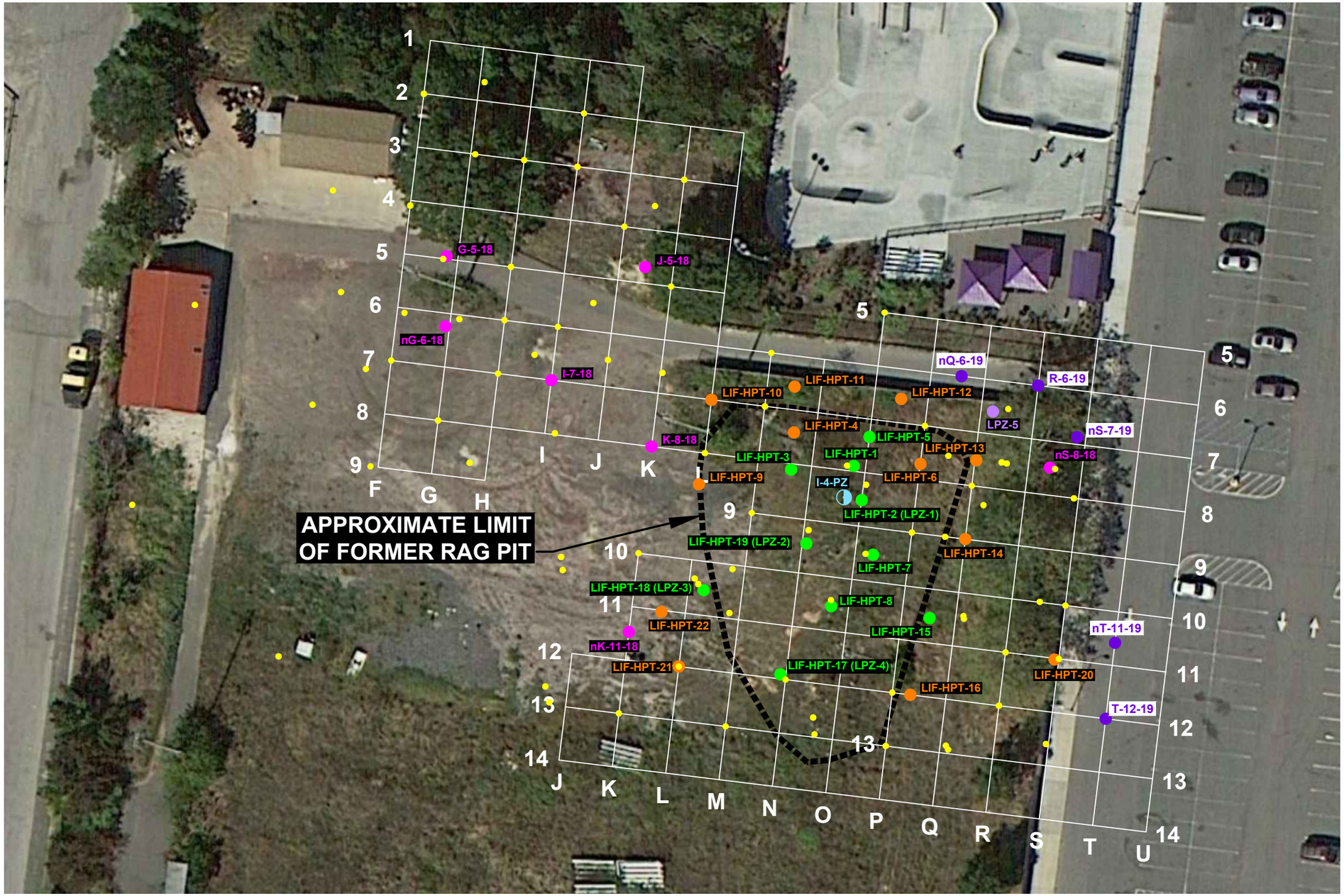
David E. Stern
Project Manager

Copies:
Ed Hannon, Northrop Grumman
Steve Karpinski, NYSDOH
John Lovejoy, NCDOH
Richard Lenz, Town of Oyster Bay
Mike Wolfert, Arcadis
William Lais, EMAGIN

Enclosures:

Figures

1 Figure 1: Proposed Sampling Locations



LEGEND:

- HISTORICAL (2004-2017) VOC SAMPLE LOCATIONS
- EXISTING PERCHED WATER PIEZOMETER LOCATION
- 2018 PHASE I LIF-HPT BORING LOCATION
- 2018 PHASE I LIF-HPT/ PHASE II SOIL BORING LOCATION
- 2018 PHASE III SOIL BORING LOCATION
- 2018 PHASE IV SUPPLEMENTAL VOC DELINEATION SAMPLE LOCATION
- PROPOSED 2019 ADDITIONAL DELINEATION SAMPLE LOCATION

VOC VOLATILE ORGANIC COMPOUND
LIF LASER-INDUCED FLUORESCENCE
HPT HYDRAULIC PROFILING TOOL

0 40' 80'
APPROXIMATE SCALE IN FEET

NOTES:

1. THE BORINGS WERE FIELD LOCATED USING A HAND-HELD GLOBAL POSITIONING SYSTEM (GPS) UNIT.
2. COORDINATES REFER TO NEW YORK STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83).
3. THIS FIGURE DOES NOT REFLECT ALL SOIL BORINGS PERFORMED IN 2019 TO DELINEATE VOCS IN SOIL.

NORTHROP GRUMMAN SYSTEMS CORPORATION
OPERABLE UNIT 3
BETHPAGE, NEW YORK

LOCATION OF SOIL BORINGS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reed) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\NORTHROP GRUMMAN\OU3 SUBPROJECT 7 PARK SOILS V2019\NY001496.3TTM01-DWGING\C-BP-PSRB6-VOC2019.dwg LAYOUT: 1 SAVED: 4/30/2019 12:21 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 5/1/2019 1:55 PM BY: SANCHEZ, ADRIAN
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