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ENVIRONMENT

Mr. Steven Scharf
Project Manager
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7015

Subject:
Work Plan Addendum for Phase 2 Step Out Soil Sampling (PCBs and Metals), Operable Unit 3, Former Grumman Settling Ponds, Bethpage, New York.

Date:
May 26, 2015

Contact:
David Stern

Phone:
631-391-5284

Email:
David.stern@arcadis-us.com

Our ref:
NY001051.0000

Dear Steve:

ARCADIS, on behalf of Northrop Grumman, has prepared this Phase 2 Step Out work plan addendum (Addendum) for additional drilling and soil sampling for PCBs, cadmium, chromium, and arsenic (metals) at the Bethpage Community Park (Park) and former Grumman Access Road properties, in Bethpage, NY. We request that NYSDEC grant approval of this Addendum. As discussed during our March 23, 2015 progress update meeting, we will present this plan to the Town of Oyster Bay (Town) prior to commencing with this work. We have assumed that access to the Park by the Town will not be unreasonably withheld.

Background and Objectives

This Addendum describes additional PCB and metals sampling and analysis at the following three general areas (1) within and near the former ball field area of the Bethpage Community Park, (2) the southern and eastern portion of the Park, and (3) the Grumman Plant 24 Access Road. ARCADIS has completed the PCB and metals investigation, as described in the *Pre-Design Sampling Work Plan for PCBs* (Work Plan), in November, 2014. Such Work Plan activities had been approved by the New York State Department of Environmental Conservation (NYSDEC). The preliminary results of the investigation suggest that the distribution of these constituents in soils is highly complex and that additional refinement of the vertical and horizontal extent of metals and PCBs in soil is necessary to meet the work plan objectives; therefore, these results will collectively supplement the data collected during the Operable Unit 3 (OU3) Site Area Remedial Investigation (RI) (ARCADIS 2011). As such, we have prepared this addendum to meet the following objectives:

- Enhance the delineation of the 1 PPM, 10 PPM, and 50 PPM total PCB contours
- Enhance the delineation of the cadmium, chromium and arsenic contours to a depth of ten feet below land surface, within the areas of PCB impacts, relative to the NYSDEC residential soil cleanup objectives (SCOs)
- Determine PCB concentrations in surface soil in the southern Park area

Methodology

Step Out Sampling

Drilling (via Geoprobe), soil sampling and analysis (via off-site fixed-based lab) and data evaluation for this additional investigation will be conducted using the procedures and protocols that are consistent with the NYSDEC-approved Work Plan. Soil borings will be advanced to the specified depths and soil samples will be obtained from selected intervals. A total of 50 borings will be advanced. A total of 486 samples will be analyzed for PCBs, 60 samples will be analyzed for cadmium, 80 samples will be analyzed for chromium, and 60 samples will be analyzed for arsenic. **Table 1** provides the Phase 2 Step Out Plan sampling details. **Figure 1** provides the proposed drilling locations.

Surface Soil Sampling

Stage 1 surface soil samples will be collected from nine locations at the southern portion of the Park. Samples will be collected by hand trowel and submitted to an off-site laboratory for analysis of PCBs. Should one or more Stage 1 samples indicate PCB concentrations greater than the NYSDEC residential soil cleanup objective of 1 ppm, then the eight Stage 2 surface samples will be conducted. Additional details are provided in **Table 1**. **Figure 2** shows the locations of the Stages 1 and 2 surface soil samples.

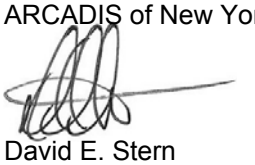
Data Validation and Reporting

NYSDEC Category B deliverables plus electronic data deliverable (EDD) will be received from the laboratory. Validated analytical results (validation will be performed on 15% of total samples) from this Addendum will be transmitted to the NYSDEC.

We look forward to proceeding with this work. Please contact us with any questions or if you need additional information.

Sincerely,

ARCADIS of New York, Inc.



David E. Stern
Senior Hydrogeologist/Associate Project Manager

Enclosures

Copies:
Carlo San Giovanni, ARCADIS
Ed Hannon, Northrop Grumman
Marybeth Strakosch, Northrop Grumman
File

Table 1. Phase 2 Step Out Boring Plan, Operable Unit 3, Northrop Grumman Systems Corporation, Bethpage, NY

		Analyte					Depths (ft bls)	Sample Count			
Area	Boring ID	VOCs	PCBs	Cd	Cr	As	Total Depth	PCBs	Cd	Cr	As
Access Road	AJ-25-15	-	X	-	-	-	10	5	0	0	0
Access Road	AG-23-15	-	X	-	-	-	10	5	0	0	0
Access Road	AP-25-15	-	X	-	-	-	10	5	0	0	0
Access Road	nAW-26-15	-	X	-	-	-	10	5	0	0	0
Access Road	nBB-27-15	-	X	-	-	-	10	5	0	0	0
Access Road	BE-26-15	-	X	-	-	-	10	5	0	0	0
Access Road	BF-24-15	-	X	-	-	-	10	5	0	0	0
Access Road	nAY-26-15	-	X	X	X	X	10	5	5	5	5
Access Road	AT-25-15	-	X	X	X	X	10	5	5	5	5
Access Road	nAE-23-15	-	X	-	-	-	4	2	0	0	0
Eastern Park	AJ-18-15	-	X	-	-	-	10	5	0	0	0
Eastern Park	nAO-22-15	-	X	-	-	-	10	5	0	0	0
Eastern Park	nAW-22-15	-	X	-	-	-	10	5	0	0	0
Eastern Park	nAV-21-15	-	X	-	-	-	10	5	0	0	0
Eastern Park	BD-19-15	-	X	-	-	-	10	5	0	0	0
Eastern Park	BC-17-15	-	X	-	-	-	10	5	0	0	0
Eastern Park	nS-18-15	-	X	-	-	-	6	3	0	0	0
Eastern Park	nT-18-15	-	X	-	-	-	6	3	0	0	0
Eastern Park	nT-19-15	-	X	-	-	-	6	3	0	0	0
Ball Field	nL-22-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nM-14-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nO-14-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nO-15-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nN-16-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nP-16-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nP-19-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nR-19-15	-	X	-	-	-	10	5	0	0	0
Ball Field	nH-19-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nG-21-15	-	X	-	-	-	30	15	0	0	0
Ball Field	D-20-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nB-15-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nB-16-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nL-7-15	-	X	-	X	-	30	15	0	5 (1)	0
Ball Field	G-7-15	-	X	-	X	-	30	15	0	5 (1)	0
Ball Field	H-7-15	-	X	-	X	-	30	15	0	5 (1)	0
Ball Field	nH-6-15	-	X	-	X	-	30	15	0	5 (1)	0
Ball Field	nD-5-15	-	X	-	-	-	30	15	0	0	0
Ball Field	C-6-15	-	X	-	-	-	30	15	0	0	0
Ball Field	nD-6-15	-	X	-	-	-	30	15	0	0	0
Ball Field	J-2-15	-	X	X	X	X	30	15	5 (1)	5 (1)	5 (1)
Ball Field	Q-17-15	-	X	-	-	-	10	5	0	0	0
Ball Field	F-13-15	-	-	X	X	X	10	0	5	5	5
Ball Field	G-16-15	-	-	X	X	X	10	0	5	5	5
Ball Field	nD-16-15	-	-	X	X	X	10	0	5	5	5
Ball Field	nP-6-15	-	X	X	X	X	30	15	5 (1)	5 (1)	5 (1)
Ball Field	nM-6-15	-	X	X	X	X	30	15	5 (1)	5 (1)	5 (1)
Ball Field	nK-7-15	-	X	X	X	X	30	15	5 (1)	5 (1)	5 (1)
Ball Field	nE-5-15	-	X	X	X	X	30	15	5 (1)	5 (1)	5 (1)
Ball Field	F-3-15	-	X	X	X	X	30	15	5 (1)	5 (1)	5 (1)
Ball Field	nB-4-15	-	X	X	X	X	30	15	5 (1)	5 (1)	5 (1)

Table 1. Phase 2 Step Out Boring Plan, Operable Unit 3, Northrop Grumman Systems Corporation, Bethpage, NY

		Analyte					Depths (ft bls)	Sample Count			
Area	Boring ID	VOCs	PCBs	Cd	Cr	As	Total Depth	PCBs	Cd	Cr	As
Surface Soil Sampling - Stage 1											
Southern Park	nV-17-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nW-17-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nY-17-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nAH-17-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nAG-19-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	AH-20-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nAJ-20-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	AE-22-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	AG-22-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Surface Soil Sampling - Stage 2											
Southern Park	nAA-17-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nAD-17-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nAI-18-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	AI-21-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nV-22-15	-	X	X	X	-	0 - 2 in	1	1	1	0
Southern Park	X-22-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nAA-22-15	-	X	-	-	-	0 - 2 in	1	0	0	0
Southern Park	nAJ-22-15	-	X	-	-	-	0 - 2 in	1	0	0	0

Notes and Definitions:

Analytes, analytical methods, and sample collection methods will be performed in accordance with the OU3 Site Ares RI Work Plan
Sample IDs refer to the grid cell locations used in the PCB/metals sampling work plan
Stage 2 surface sampling performed if Stage 1 results indicate PCB concentrations exceed NYSDEC residential SCO of 1 ppm at any one location.

(1)	Only samples from 0 to 10 feet bls were analyzed for metals
TCLP	Toxicity Characteristic Leachging Procedure
VOC	Volatile Organic Compound
PCB	Polychlorinated biphenyl
Cd	cadmium
Cr	chromium
As	arsenic
ft bls	feet below land surface

LEGEND:

- HISTORICAL SAMPLE LOCATION
- METALS STEP-OUT BORING
- PCB STEP-OUT BORING
- COMBINED PCBs AND METALS STEP-OUT BORING
- TCLP AS
- TCLP Cd
- TCLP Cr
- TCLP VOC

0 120' 240'

APPROXIMATE SCALE IN FEET

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK

BETHPAGE COMMUNITY PARK PCB AND METALS STEP-OUT BORINGS AND TCLP LOCATIONS

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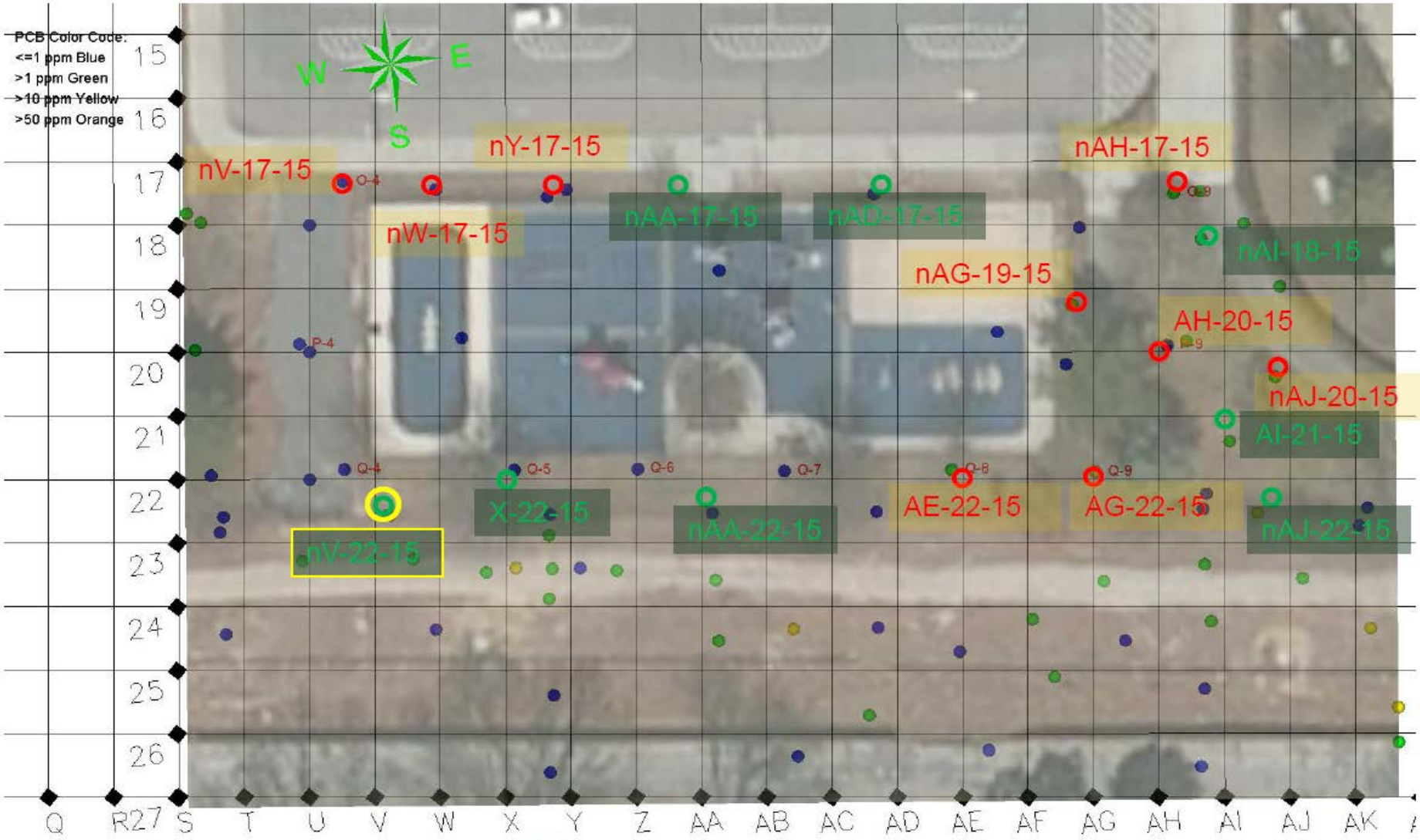
FIGURE 1

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
C:\Users\als\sanchez\Desktop\ACTNY\0010510\0000\PAKB6NY1051B05b.dwg LAYOUT: 1 SAVED: 5/22/2015 1:38 PM ACADVER: 19.1S (LMS TECH)
XREFS: PROJECTNAME: ----
X1051X00 IMAGES: ----
X1496X01 Aerial.ecw
PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 5/22/2015 1:39 PM BY: SANCHEZ, ADRIAN

Figure 2.
Proposed Exposure Point Surface Soil Sampling Locations, Operable Unit 3, Northrop Grumman Systems Corporation, Bethpage, NY



Stage 1 Proposed Exposure Point Location (0-2")

Stage 2 Proposed Exposure Point Location (0-2")

PCB, Cd, Cr Sample Location

Imagine the result

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