ARCADIS
Infrastructure, environment, buildings

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Mr. Steven Scharf, P.E.
New York State Department of Environmental Conservation
Remedial Action, Bureau A
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7015

ENVIRONMENTAL

Subject:
Remedial Investigation Work Plan Addendum 1,
Bethpage Community Park, Former Grumman Settling Ponds (Operable Unit 3),
Bethpage, New York.

Date:
13 June 2005

Contact:
David E. Stern

Phone:
(631) 391-5284

Email:
dstern@arcadis-us.com

Our ref:
NY001348.0805.00001

Dear Mr. Scharf:

ARCADIS is submitting this addendum to the Phase 1B Remedial Investigation (RI) work plan on behalf of Northrop Grumman Corporation (NGC) to conduct additional investigation at two former operational areas at the Bethpage Community Park (Park) site as part of the on-site portion of the Operable Unit 3 (OU3) RI. This work plan addendum is intended to be dynamic in nature to allow flexibility in scope (based on field conditions and findings), and includes the proposed data collection, analysis, and evaluation methodologies to be used. Table 1 summarizes the proposed field activities and laboratory analyses. Figure 1 shows the site plan and the proposed work activity locations. The plan proposed herein incorporates by reference the goals and methods that are described in the NYSDEC-approved Phase 1B work plan, dated May 16, 2005.

ARCADIS proposes the following addendum to the Phase 1B work scope:

1. **Vertical Profile Borings (VPBs):** Two VPBs (VPB-27 and VPB-28) are proposed to investigate two former operational areas on the current Park property, known as the "Former Rag/Oil Pit" and the "Former Short-Stop Basin". The six contingency VPBs that were originally proposed in the May 16, 2005 Phase 1B RI work plan are not affected by this additional work scope and remain as contingency VPBs, however they have been re-numbered as "VP-29 to VP-34" to account for these two new VPBs.

2. **Data Evaluation:** ARCADIS will review, summarize, and interpret the data collected in the above task using methods similar to those described in previous work plans.

ARCADIS' general approach for the proposed work scope, which will be implemented upon receipt of NYSDEC written approval, is described in the following sections.

Pre-Field Preparation

ARCADIS will perform the subject work in accordance with the existing Access Agreement between NGC and the Town of Oyster Bay.

Utility Markout/Geophysical Surveying

ARCADIS will perform an independent location and mark-out of underground utilities and other potential buried obstructions prior to commencing intrusive work. The equipment and methods used will be consistent with those described in the Phase 1B RI Work Plan. New York State One-Call will also be contacted before subsurface work begins.

Vertical Profile Borings

The objective of this addendum is to fill data gaps in two operational areas: 1.) The former Rag/Oil Pit and 2.) The former Short-Stop Basin. The investigation will develop information to refine delineation of known VOC and semi-volatile organic compound (SVOC) impacts to soil and assist in determining if these two areas are sources of VOC impacts to groundwater.

ARCADIS will utilize Delta Well & Pump Co., Inc. to drill and sample the proposed VPBs. The driller will utilize a hollow-stem auger drilling rig and ancillary vehicles/equipment consistent with approved practices. The rig and equipment will utilize the previously-designated staging area on the NGC commissary property (west of the Park) for the staging and decontamination of equipment. The scope of the work plan addendum field investigation will include the drilling and collection of soil and groundwater samples from two VPBs on Park property. Selected soil samples will be collected above the water table from these two VPBs (and selected future VPBs) and submitted for laboratory analysis of VOCs and SVOCs. Groundwater samples will be collected from these two VPBs (and selected future VPBs) and submitted for laboratory analysis of VOCs and SVOCs. ARCADIS may adjust laboratory turnaround times to accelerate/optimize the drilling program, based on the timing of groundwater quality results obtained. ARCADIS will provide a full-time qualified on-site field hydrogeologist to oversee/document activities and collect the soil and groundwater samples.

VPB drilling, sampling, and abandonment methods will be consistent with those described in the NYSDEC-approved Phase 1B RI Work Plan.

Data Evaluation

The data collected as part of this portion of the RI will be incorporated into the OU3 RI Report (to be prepared).

Data evaluation of the VPB soil and groundwater data will include validation of the data (consistent with NYSDEC DER-10 Draft Site Characterization Guidance Document [2002]), updates/modifications to the existing data tables, updates/modifications to the draft hydro-chemical cross sections and updates to draft plan-view VOC plume maps that were provided to NYSDEC in our December 1, 2004 report.

Data validation and useability requirements/protocols will be consistent with the QAPP developed for the NGC site (ARCADIS G&M, Inc. 2002).

Schedule

As this work plan addendum must be approved by the NYSDEC and submitted to TOB prior to conducting this work, ARCADIS would appreciate NYSDEC's prompt review and approval of this work plan addendum.

If you have any questions or comments, please feel free to call.

Sincerely,

ARCADIS G&M, Inc.

David E. Stern
Senior Hydrogeologist

Carlo San Giovanni
Project Manager

Michael Wolfert
Project Director

Enclosures

Copies:
John Cofman, Northrop Grumman
Larry Leskovjan, Northrop Grumman
Gregory J. Giammalvo, Town of Oyster Bay
Steven L. Labriola, Town of Oyster Bay
Richard W. Lenz, P.E., Town of Oyster Bay
Theodore W. Firetog, Rivkin Radler, LLP

Table 1. Summary of Phase 1B Work Plan Addendum On-Site Remedial Investigation and Rationale, Former Grumman Settling Ponds (Operable Unit 3 - Bethpage Community Park), Bethpage, New York.

Description of Activity Location Identification	Proposed Total Depth (ft bls)	Proposed Soil Sampling Intervals (ft)	Proposed Soil Analysis	Proposed Groundwater Sampling Intervals (ft)	Proposed Groundwater Analysis	Proposed Geophysical Logging	General Rationale
Vertical Profile Borings							
VP-27	110	5 / 10 (1)	Lithology / VOC / SVOC (2)	10 (1)	VOC / SVOC (1) (2)	Yes (4)	Collect additional soil samples to assist in delineaton of known soil impacts at former Rag/Oil Pit (VP-27) and the Short-Stop Basin (VP-28). Collect additional groundwater samples to assist in determing whether these two areas are sources of VOC impacts to groundwater.
VP-28	110	5 / 10 (1)	Lithology / VOC / SVOC / TOC (2) (3)	10 (1)	VOC / SVOC (1) (2)	Yes (4)	

Footnotes:

(1) Groundwater sampling for VOC and SVOC analysis shall commence from the bottom of the borehole and will proceed at the following intervals: 105-110 ft bls, 95-100 ft bls, 85-90 ft bls, 75-80 ft bls, 65-70 ft bls, and 55-60 ft bls (the water table is estimated to be 55-60 ft bls). Soil sampling will commence at 5 ft bls and proceed at 5-ft intervals to 20 ft bls. At the water table (estimated at 60 ft bls) soil sampling will proceed at 10-ft intervals to depth. PID headspace screening will be performed on samples collected to 20 ft bls. Soil samples that exhibit headspace levels greater than one order of magnitude above background or visual evidence of impacts will be submitted for VOC and SVOC laboratory analyses.

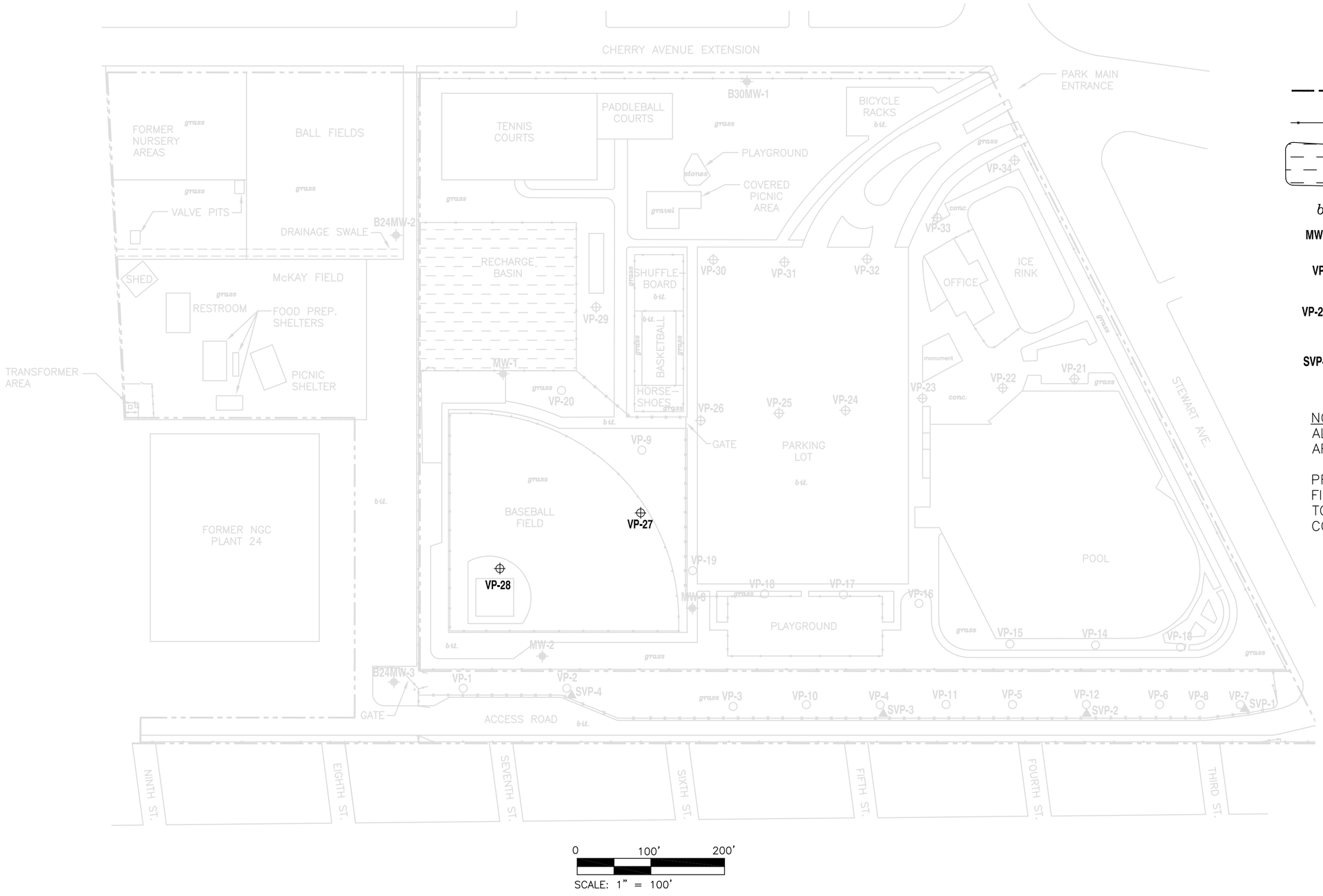
(2) Sample analysis shall be performed using the following methods:
- SVOCs: TCL List of SVOCs using NYSDEC ASP Method 2000.
- VOCs: TCL List of VOCs using NYSDEC ASP Method 2000.
- TOC: USEPA Method 9060.

(3) TOC samples will be collected from selected VPBs at selected intervals below the water table based on depth and/or lithology.

(4) Geophysical logging will be performed using the natural gamma method.

Definitions:

VPB	Vertical Profile Boring
ft bls	feet below land surface
TCL VOC	Target Compound List of Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
TOC	Total Organic Carbon
NYSDEC	New York State Department of Environmental Conservation
SVOC	Semi-Volatile Organic Compounds



EXPLANATION

- PROPERTY LINE
- FENCE
- BASIN
- *bit.* BITUMINOUS PAVEMENT
- MW-3 EXISTING MONITORING WELL
- VP-1 DRILLED AND SAMPLED VERTICAL PROFILE BORING
- VP-22 PROPOSED VERTICAL PROFILE BORING
- SVP-1 DRILLED AND SAMPLED SOIL VAPOR POINT

NOTES:
ALL WELL, SVP & VPB LOCATIONS ARE APPROXIMATE.

PROPOSED VPB LOCATIONS WILL BE FIELD VERIFIED AND ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS AND UTILITY MARKOUTS.

DRAWING REFERENCE:
DVIRKA AND BARTILUCCI 2003

REV. ISSUED DATE DESCRIPTION

SEAL

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PROJECT TITLE
OPERABLE UNIT 3
FORMER GRUMMAN SETTLING PONDS
BETHPAGE, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED BY
C. SAN GIOVANNI	M. WOLFERT		D. STERN

SHEET TITLE
SITE PLAN SHOWING EXISTING & PROPOSED SOIL VAPOR POINTS AND VERTICAL PROFILE BORINGS

TASK/PHASE NUMBER	DRAWN BY
00001	E. HUGHES

PROJECT NUMBER	DRAWING NUMBER
NY001348.0805	1

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