

Mr. Jason Pelton
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Subject:
Work Plan - Groundwater Sampling for Emerging Contaminants
Northrop Grumman Bethpage Facility
NYSDEC Site ID: HW130003A

ENVIRONMENT

Date:
June 4, 2018

Dear Jason:

Contact:
David Stern

Arcadis has prepared this Work Plan on behalf of Northrop Grumman Systems Corporation (Northrop Grumman) in response to the NYSDEC letter, dated April 10, 2018 requesting Northrop Grumman to collect and analyze groundwater samples for emerging contaminants (i.e., 1,4-dioxane and per- and polyfluoroalkyl substances [PFAS]) from existing monitoring wells at the Northrop Grumman Bethpage Facility in 2018. The work provides the technical approach for the performance of a single groundwater sampling event utilizing existing Northrop Grumman monitoring wells.

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David.stern@arcadis.com

Our ref:
NY001496.2401/3401

TECHNICAL WORK PLAN

The objective of scoping the sampling program is to collect samples from existing OU2 and OU3 monitoring wells that will provide a representative spatial distribution (i.e., hydraulically upgradient, site boundary, and downgradient) and vertical distribution (i.e., different depths in the aquifer). Arcadis reviewed the spatial and temporal trends for volatile organic compounds (VOCs) and 1,4-dioxane in OU2 and OU3 wells currently monitored and identified 24 OU2 monitoring wells and 8 OU3 wells for the proposed sampling of emerging contaminants. The location of OU2 and OU3 monitoring wells proposed for sampling are provided on **Figures 1 and 2**, respectively.

Sampling and laboratory analysis will conform to NYSDEC protocols for analytical methods, reporting requirements, and special precautions referenced in NYSDEC's April 10th letter. Groundwater will be purged and samples collected using PFAS-free pumps/tubing. Some monitoring wells proposed for sampling are equipped with dedicated sampling equipment (i.e., bladder pumps / inflatable

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packers) used as part of routine groundwater monitoring performed to-date. As the current dedicated equipment is not suitable for the purposes of PFAS analysis, Arcadis will remove such equipment and allow the wells to equilibrate for a period of one month to ensure representative groundwater samples are collected.

Samples will be sent to an ELAP-certified analytical laboratory (for the stated analytical methods) for analysis of the NYSDEC-specified list of PFAS compounds using USEPA Method 537 and 1,4-Dioxane using USEPA Modified Method 8270D SIM. Samples will be analyzed under a standard turnaround time of three weeks, and the laboratory will provide NYSDEC Category B reports and electronic data deliverables (EDDs). Level IV validation of analytical will be performed following receipt of final laboratory reports. The validated data will be tabulated and provided to NYSDEC in a letter report. The validated EDDs will be sent electronically as part of ongoing routine submission to the NYSDEC.

SCHEDULE

Removal of dedicated sampling equipment from applicable wells will occur in early June 2018, during the annual OU2 groundwater monitoring round that is currently in progress. Sampling for 1,4-dioxane and PFAS compounds will require approximately 10 days for two field teams to complete starting in July 2018, following completion of the OU2 annual sampling round. Laboratory data will be validated when received and the final data report will be submitted to NYSDEC by the end of August 2018.

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

Sincerely,

Arcadis of New York, Inc.



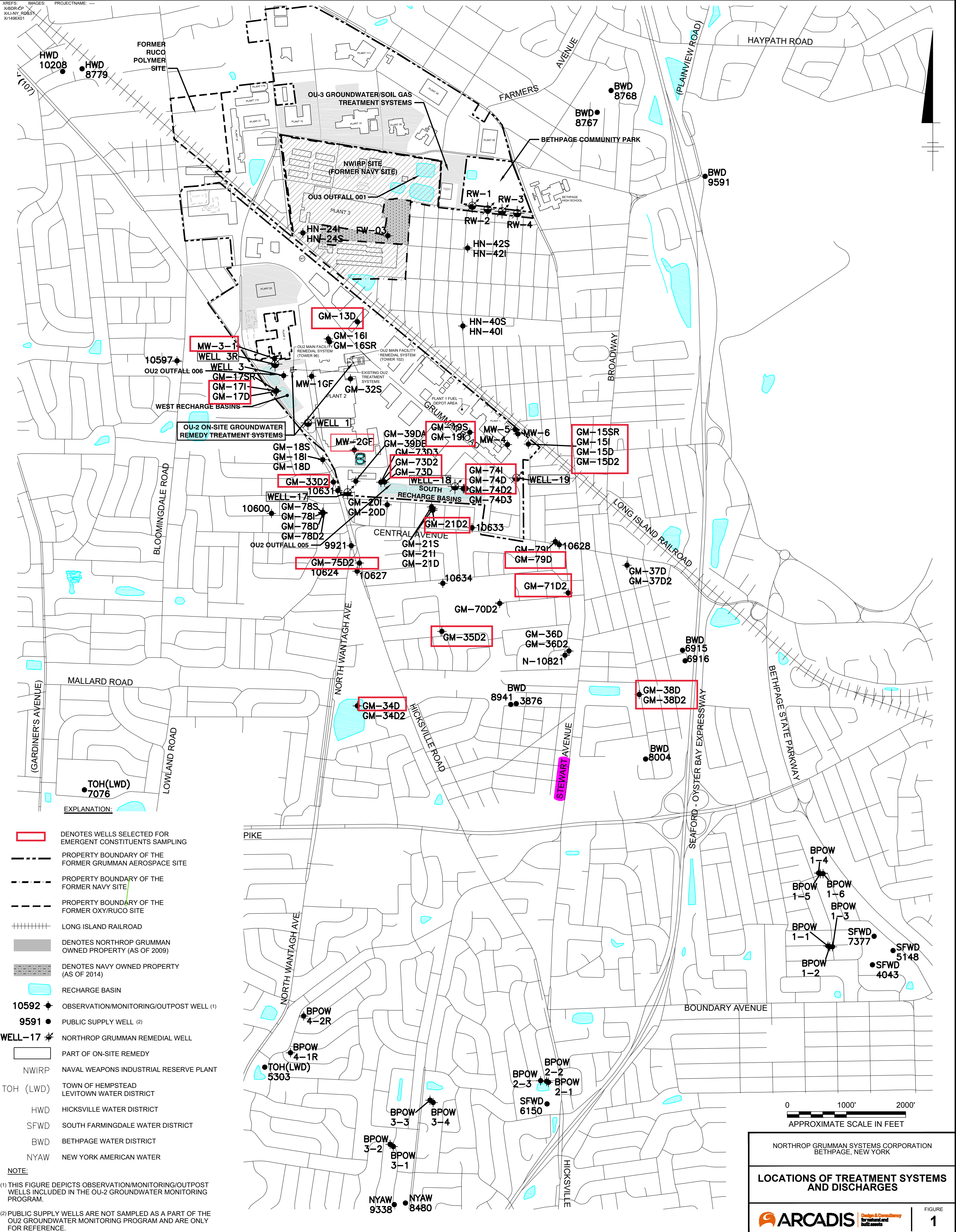
David E. Stern, PG
Senior Hydrogeologist

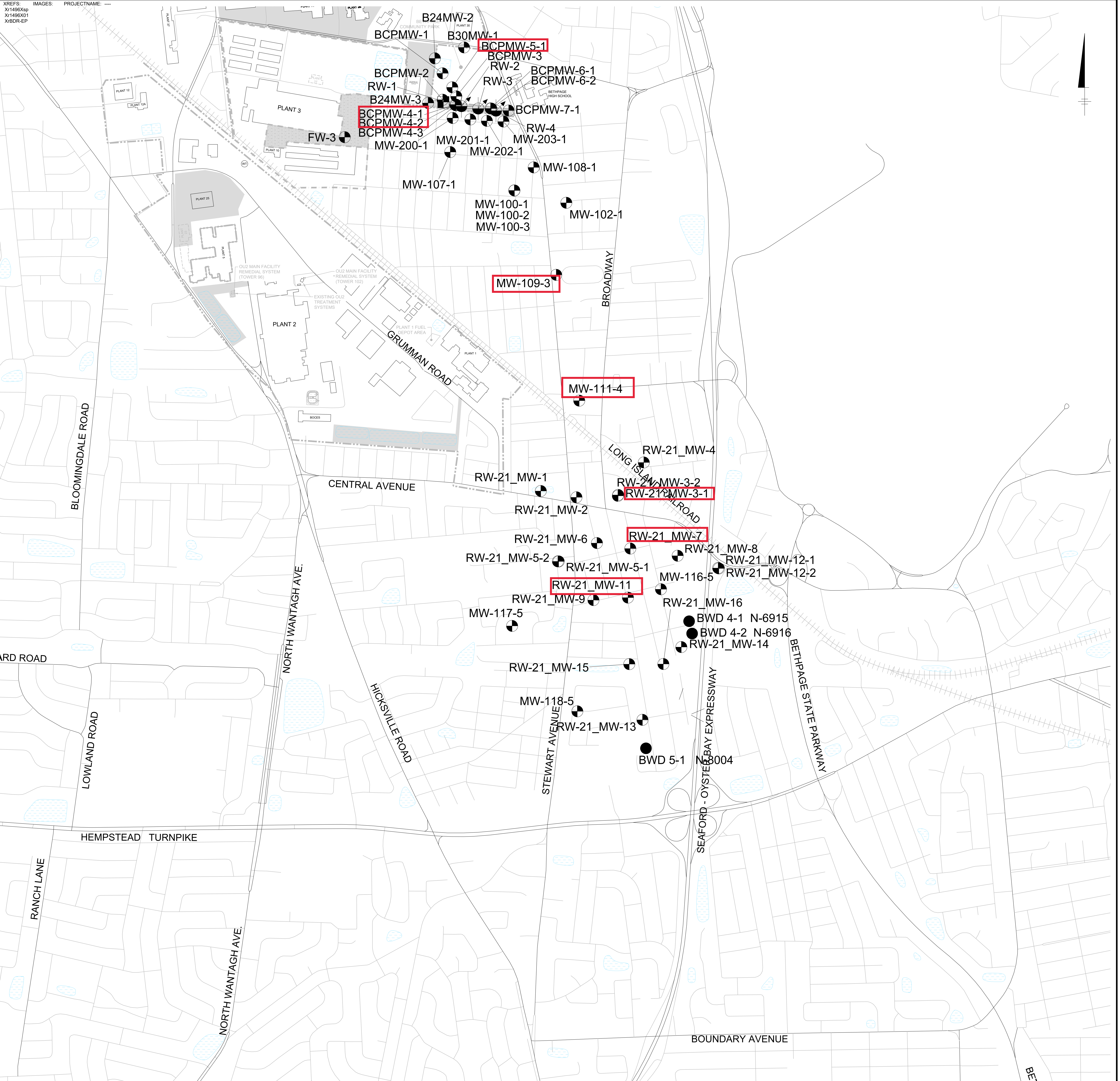


Carlo San Giovanni, PG
Project Manager

Copies:
Donald Hesler, NYSDEC
Ed Hannon, Northrop Grumman

Enclosures

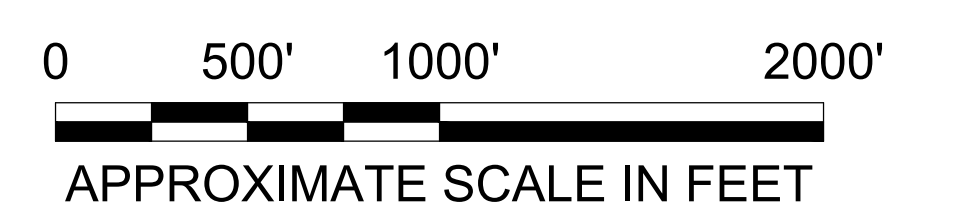




EXPLANATION:

- DENOTES WELLS SELECTED FOR EMERGENT CONSTITUENTS SAMPLING
- FORMER NORTHROP GRUMMAN PROPERTY BOUNDARY
- - - - - FORMER OCCIDENTAL CHEMICAL CORPORATION PROPERTY BOUNDARY
- NORTHROP GRUMMAN PROPERTY
- ▨ FORMER NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- ⊕ MONITORING WELL
- ⊖ REMEDIAL WELL
- ☼ INJECTION WELL
- PUBLIC SUPPLY WELL

NAVY AND BETHPAGE WELLS SHOWN FOR REFERENCE PURPOSES



NORTHROP GRUMMAN SYSTEMS CORPORATION
 BETHPAGE, NEW YORK

**SITE PLAN
 SHOWING OU3 WELL LOCATIONS**