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Infrastructure, environment, buildings

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Project Engineer
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
Remedial Action, Bureau A
625 Broadway
Albany, New York 12233-7015

ENVIRONMENT

Subject:
January 2010 Monthly Progress Report
Northrop Grumman Systems Corporation
Operable Unit 3, NYSDEC Site ID # 1-30-003A, Bethpage, New York

Date:
February 12, 2010

Contact:
David Stern

Phone:
631-391-5284

Email:
David.Stern@arcadis-us.com

Our ref:
NY001496.0910.00007

Dear Steve:

In accordance with Section III of Administrative Order on Consent (AOC) Index # W1-0018-04-01, this letter reports Operable Unit 3 (OU3) activities performed by Northrop Grumman Systems Corporation (Northrop Grumman) during the month of January 2010. Activities planned for February 2010 are also discussed.

OU3 Activities Conducted During January 2010

Activities performed this period include:

On-Site and Off-Site Remedial Investigation/Feasibility Study (RI/FS)

- Continued evaluating additional Site Area Focused Feasibility Study (FFS) Alternatives to address New York State Department of Environmental Conservation (NYSDEC) comments on draft FFS

- Validated analytical data associated with the sampling of off-site monitoring wells (as part of the Study Area Remedial Investigation) are provided in Tables 1 and 2. Well locations are shown on Figure 1.

Soil Gas IRM

- Continued Operation, Maintenance, and Monitoring (OM&M) of the Soil Gas Interim Remedial Measure (IRM)

Groundwater IRM

- Continued full scale OM&M of the Groundwater IRM
- Submitted First OM&M Report and Baseline Analysis Report to NYSDEC
- Completed miscellaneous site work associated with completion of IRMs
- Validated analytical data associated with the sampling of IRM environmental effectiveness monitoring wells are provided in Table 3. Well locations are shown on Figure 2.

Other

- Submitted December 2009 AOC Monthly Progress Report to NYSDEC

OU3 Activities Scheduled During January 2010

On-Site and Off-Site RI/FS

- Continue evaluating additional Site Area FFS Alternatives to address NYSDEC comments
- Prepare for additional stakeholder meetings to discuss Study Area potential remedial alternatives
- Submit Supplement to the Study Area RI Report to NYSDEC

Soil Gas IRM

- Continue routine OM&M of the Soil Gas IRM

Groundwater IRM

- Continue routine OM&M of the Groundwater IRM
- Prepare for and conduct change-out of the vapor phase granular activated carbon (VPGAC) single bed

Other

- Submit January 2010 AOC Monthly Progress Report to NYSDEC

Feel free to call us if you have any questions.

Sincerely,

ARCADIS of New York, Inc.

David E. Stern
Senior Scientist /Associate Project Manager

Copies:
J. Cofman, Northrop Grumman
K. Smith, Northrop Grumman
Bethpage Public Library – Public Repository
C. San Giovanni, ARCADIS
M. Wolfert, ARCADIS
File, ARCADIS

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Study Area Monitoring Wells, Northrop Grumman Systems Corporation, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

CONSTITUENT (ug/L)	Sample Location: / Sample Date:	GM-15S 10/23/2009	GM-15I 11/4/2009	GM-15D 10/23/2009	GM-15D2 10/23/2009	B24MW-2 10/27/2009	B24MW-3 10/27/2009	B30MW-1 10/27/2009	MW-100-1 10/26/2009
1,1,1-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene		< 5	< 5	< 5	**0.91 J**	< 5	< 5	< 5	< 5
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		< 50	< 50 B	< 50	< 50	< 50	< 50 B	< 50	< 50
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 5	< 5	**1.2 J**	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	**0.3 J**	**0.33 J**	< 5	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		**0.81 J**	< 5	< 5	**0.39 J**	< 5	**14**	< 5	**0.46 J**
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		< 5	< 5	**0.52 J**	**10**	< 5	**0.52 J**	< 5	< 5
Toluene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		**11**	**3.4 J**	**1.1 J**	**11**	**3.5 J**	**38**	< 5	< 5
Trichlorotrifluoroethane (Freon 113)		< 5	< 5	< 5	**1.3 J**	< 5	< 5	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
TVOC		**11.8**	**3.4**	**1.9**	**25.1**	**3.5**	**52.5**	0	**0.5**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Study Area Monitoring Wells, Northrop Grumman Systems Corporation, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

CONSTITUENT (ug/L)	Sample Location: / Sample Date:	MW-100-1 (Rep) 10/26/2009	MW-100-2 10/26/2009	MW-100-3 10/26/2009	MW-102-1 11/4/2009	MW-102-1 (Rep) 11/4/2009	MW-107-1 10/28/2009	MW-108-1 10/28/2009
1,1,1-Trichloroethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	**7.6 J**	**0.36 J**	**0.5 J**	< 5	**0.5 J**	< 5
1,1-Dichloroethene		< 5	**3.6 J**	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
2-Butanone		< 50	< 500	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 500	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 500	< 50	< 50	< 50	< 50	< 50
Acetone		< 50	< 500	< 50	< 50	< 50	< 50 B	< 50
Benzene		< 0.7	< 7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 50	**0.51 J**	< 5	< 5	< 5	**1.2 J**
Chloroethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Chloroform		< 5	**8.5 J**	**3.5 J**	**0.8 J**	< 5	**0.49 J**	< 5
Chloromethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		**0.48 J**	**1400**	**2.1 J**	< 5	< 5	**36**	< 5
cis-1,3-dichloropropene		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		< 5	< 50	**2.3 J**	< 5	< 5	**1.1 J**	< 5
Toluene		< 5	< 50	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	**43 J**	< 5	< 5	< 5	**0.49 J**	< 5
trans-1,3-dichloropropene		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		< 5	**190**	**61**	< 5	**3.1 J**	**85**	**0.34 J**
Trichlorotrifluoroethane (Freon 113)		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride		< 2	**29**	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 50	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 50	< 5	< 5	< 5	< 5	< 5
TVOC		**0.5**	**1681.7**	**69.8**	**1.3**	**3.1**	**123.6**	**1.5**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Study Area Monitoring Wells, Northrop Grumman Systems Corporation, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

CONSTITUENT (ug/L)	Sample Location: / Sample Date:	MW-109-3 10/22/2009	MW-111-4 11/3/2009	MW-116-5 11/3/2009	MW-117-5 10/29/2009	MW-118-5 10/29/2009	HN-42S 10/21/2009	HN-42I 10/21/2009	HN-40S 10/22/2009
1,1,1-Trichloroethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		**17 J**	**32 J**	< 50	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene		**7.7 J**	**22 J**	< 50	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane		**5.8 J**	**26 J**	**7 J**	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
2-Butanone		< 500	< 2500	< 500	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 500	< 2500	< 500	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 500	< 2500	< 500	< 50	< 50	< 50	< 50	< 50
Acetone		< 500	< 2500	< 500	< 50	< 50	< 50	< 50	< 50
Benzene		< 7	< 35	< 7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Bromoform		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Chloroethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Chloroform		5.6 J	< 250	**13 J**	< 5	< 5	< 5	< 5	**0.36 J**
Chloromethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		**1100**	**1500**	**150**	< 5	< 5	< 5	**6.3**	< 5
cis-1,3-dichloropropene		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 50 B	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Styrene		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		**6.2 J**	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Toluene		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		**4.5 J**	< 250	**5.3 J**	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		**1700**	**5700**	**2000**	**0.81 J**	< 5	< 5	**17**	< 5
Trichlorotrifluoroethane (Freon 113)		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride		**4 J**	< 100	< 20	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 50	< 250	< 50	< 5	< 5	< 5	< 5	< 5
TVOC		**2850.8**	**7280**	**2175.3**	**0.81**	0	0	**23.3**	**0.36**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Study Area Monitoring Wells, Northrop Grumman Systems Corporation, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

CONSTITUENT (ug/L)	Sample Location: HN-40I Sample Date: 10/22/2009
1,1,1-Trichloroethane	< 5
1,1,2,2-Tetrachloroethane	< 5
1,1,2-Trichloroethane	< 5
1,1-Dichloroethane	< 5
1,1-Dichloroethene	< 5
1,2-Dichloroethane	< 5
1,2-Dichloropropane	< 5
2-Butanone	< 50
2-Hexanone	< 50
4-methyl-2-pentanone	< 50
Acetone	< 50
Benzene	< 0.7
Bromodichloromethane	< 5
Bromoform	< 5
Bromomethane	< 5
Carbon Disulfide	< 5
Carbon tetrachloride	< 5
Chlorobenzene	< 5
Chlorodifluoromethane (Freon 22)	< 5
Chloroethane	< 5
Chloroform	**0.75 J**
Chloromethane	< 5
cis-1,2-dichloroethene	< 5
cis-1,3-dichloropropene	< 5
Dibromochloromethane	< 5
Dichlorodifluoromethane (Freon 12)	< 5
Ethylbenzene	< 5
Methylene Chloride	< 5
Styrene	< 5
Tetrachloroethene	< 5
Toluene	< 5
trans-1,2-dichloroethene	< 5
trans-1,3-dichloropropene	< 5
Trichloroethylene	< 5
Trichlorotrifluoroethane (Freon 113)	< 5
Vinyl Chloride	< 2
Xylene-o	< 5
Xylenes - m,p	< 5
TVOC	**0.75**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Study Area Monitoring Wells, Northrop Grumman Systems Corporation, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Notes and Abbreviations:

1. Results validated following protocols specified in March 2006 RI/FS Work Plan (ARCADIS G&M, Inc. 2006).
2. Samples analyzed for the TCL VOCs using NYSDEC ASP 2000 Method OLM4.2.

Indicates an exceedance of an SCG

Bold value indicates a detection

RI/FS	Remedial Investigation/Feasibility Study
NYSDEC	New York State Department of Environmental Conservation
TCL	Target compound list
VOC	Volatile organic compound
ASP	Analytical services protocol
SCGs	Standard, criteria, and guidance values
ug/L	Micrograms per liter
TVOC	Total volatile organic compounds
NE	Not established
REP	Field replicate
J	Value is estimated
B	Compound detected in associated blank sample

Table 2. Concentrations of Metals in Groundwater Samples Collected from Study Area Monitoring Wells,
Northrop Grumman Systems Corporation, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Sample Location:	B24MW-2	B24MW-3	B30MW-1	HN-42S	HN-42I	HN-40S	HN-40I	MW-100-1	W-100-1 (RE	MW-100-2	MW-100-3	MW-102-1	MW-107-1
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/21/2009	10/21/2009	10/22/2009	10/22/2009	10/26/2009	10/26/2009	10/26/2009	10/26/2009	11/4/2009	10/28/2009
CONSTITUENT (ug/L)													
Total Cadmium	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Total Chromium	**16.2**	**16**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Dissolved Cadmium	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dissolved Chromium	< 10	**12.9**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes and abbreviations on following page.

Table 2. Concentrations of Metals in Groundwater Samples Collected from Study Area Monitoring Wells,
Northrop Grumman Systems Corporation, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Sample Location:	MW-108-1	MW-109-3	MW-111-4	MW-116-5	MW-117-5	MW-118-5
Sample Date:	10/28/2009	10/22/2009	11/3/2009	11/3/2009	10/29/2009	10/29/2009
CONSTITUENT (ug/L)						
Total Cadmium	< 5	< 5 U	< 5	< 5	< 5	< 5
Total Chromium	**11.6**	**356**	**83**	< 10	< 10	< 10
Dissolved Cadmium	< 5	< 5 U	< 5	< 5	< 5	< 5
Dissolved Chromium	**10.6**	**77.1**	**61.9**	< 10	< 10	< 10

Notes and Abbreviations:

1. Results validated following protocols specified in March 2006 RI/FS Work Plan (ARCADIS G&M, Inc. 2006).

2. Samples analyzed for the TAL Metals using NYSDEC ASP Method 2000 ILM4.0.

Bold value indicates a detection

RI/FS Remedial Investigation/Feasibility Study

NYSDEC New York State Department of Environmental Conservation

TAL Target analyte list

ASP Analytical services protocol

ug/L Micrograms per liter

Table 3. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Groundwater IRM Monitoring Wells, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

CONSTITUENT (ug/L)	Sample Location: / Sample Date:	BCPMW-4-1 12/1/2009	BCPMW-4-1 12/4/2009	BCPMW-4-3 12/1/2009	BCPMW-6-1 12/4/2009	BCPMW-6-2 12/4/2009	BCPMW-7-1 12/1/2009	MW-200-1 12/2/2009	MW-201-1 12/2/2009	MW-202-1 12/2/2009	MW-203-1 12/2/2009
1,1,1-Trichloroethane		**2.4 J**	< 10	< 5	< 5	**0.78 J**	< 5	< 5	**3.3 J**	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
1,1,2-Trichloroethane		**0.38 J**	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
1,1-Dichloroethane		**46**	**8.7 J**	< 5	< 5	**0.65 J**	< 5	< 5	**9 J**	< 5	< 5
1,1-Dichloroethene		**14**	**2.7 J**	< 5	< 5	**0.44 J**	< 5	< 5	**8.1 J**	< 5	< 5
1,2-Dichloroethane		**0.65 J**	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
1,2-Dichloropropane		**4.7 J**	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
2-Butanone		< 50	< 100	< 50	< 50	< 50	< 50	< 50	< 500	< 50	< 50
2-Hexanone		< 50	< 100	< 50	< 50	< 50	< 50	< 50	< 500	< 50	< 50
4-methyl-2-pentanone		< 50	< 100	< 50	< 50	< 50	< 50	< 50	< 500	< 50	< 50
Acetone		< 50	< 100	< 50	< 50	< 50	< 50	< 50	< 500	< 50	< 50
Benzene		**0.44 J**	< 1.4	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Bromoform		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Bromomethane		R	< 10	< 5	R	R	R	R	< 50	< 5	< 5
Carbon Disulfide		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Carbon tetrachloride		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Chlorobenzene		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Chlorodifluoromethane (Freon 22)		**6.2**	**0.8 J**	< 5	**1700 EJ**	< 5	**1.5 J**	< 5	< 50	< 5	**17**
Chloroethane		**2.4 J**	**1.1 J**	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Chloroform		< 5	< 10	**0.32 J**	**0.32 J**	< 5	< 5	**2.3 J**	< 50	**6.7**	**2.6 J**
Chloromethane		R	**R**	R	R	R	R	R	R	< 5	< 5
cis-1,2-dichloroethene		**750 D**	**270**	< 5	**1.7 J**	< 5	< 5	**5.7**	**1300**	**0.58 J**	**0.83 J**
cis-1,3-dichloropropene		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Dibromochloromethane		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Ethylbenzene		< 5	**0.78 J**	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Methylene Chloride		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Styrene		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Tetrachloroethene		**0.64 J**	**0.82 J**	< 5	< 5	**0.79 J**	< 5	< 5	< 50	< 5	< 5
Toluene		< 5	< 10 B	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
trans-1,2-dichloroethene		**2.5 J**	**1.3 J**	< 5	< 5	< 5	< 5	< 5	**3.5 J**	< 5	< 5
trans-1,3-dichloropropene		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Trichloroethylene		**170**	**310**	**0.51 J**	**1.6 J**	**0.45 J**	< 5	**12**	**230**	**9.3**	**0.7 J**
Trichlorotrifluoroethane (Freon 113)		< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Vinyl Chloride		**540 D**	**58**	< 2	< 2	< 2	< 2	< 2	**38**	< 2	< 2
Xylene-o		**8**	< 10 B	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
Xylenes - m,p		< 5	< 10 B	< 5	< 5	< 5	< 5	< 5	< 50	< 5	< 5
TVOC		**1,548.3**	**655**	**0.83**	**1,703.6**	**3.1**	**1.5**	**20**	**1,591.9**	**16.6**	**21.1**

Notes and abbreviations on last page.

Table 3. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Groundwater IRM Monitoring Wells, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Notes and Abbreviations:

1. Results validated following protocols specified in March 2006 RI/FS Work Plan (ARCADIS G&M, Inc. 2006).
2. Samples analyzed for the TCL VOCs using NYSDEC ASP Method 2000 OLM4.3.

Bold value indicates a detection

RI/FS	Remedial Investigation/Feasibility Study
NYSDEC	New York State Department of Environmental Conservation
TCL	Target compound list
VOC	Volatile Organic Compound
ASP	Analytical services protocol
ug/L	Micrograms per liter
TVOC	Total volatile organic compounds
J	Value is estimated
D	Constituent identified from secondary dilution
R	

CITY:Melville-NY DIV/GROUP:SER1 DB:A.Sanchez LD: PIC: PM:C.S.Giovanni TM:D.Stern LYR:ON=*;OFF=*REF*
G:\ENVCAD\Melville-NY\NY001496\0910\00007\01 MWlocations.dwg LAYOUT: 1 SAVED: 2/4/2010 4:09 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: PDF PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 2/5/2010 9:27 AM BY: SANCHEZ, ADRIAN

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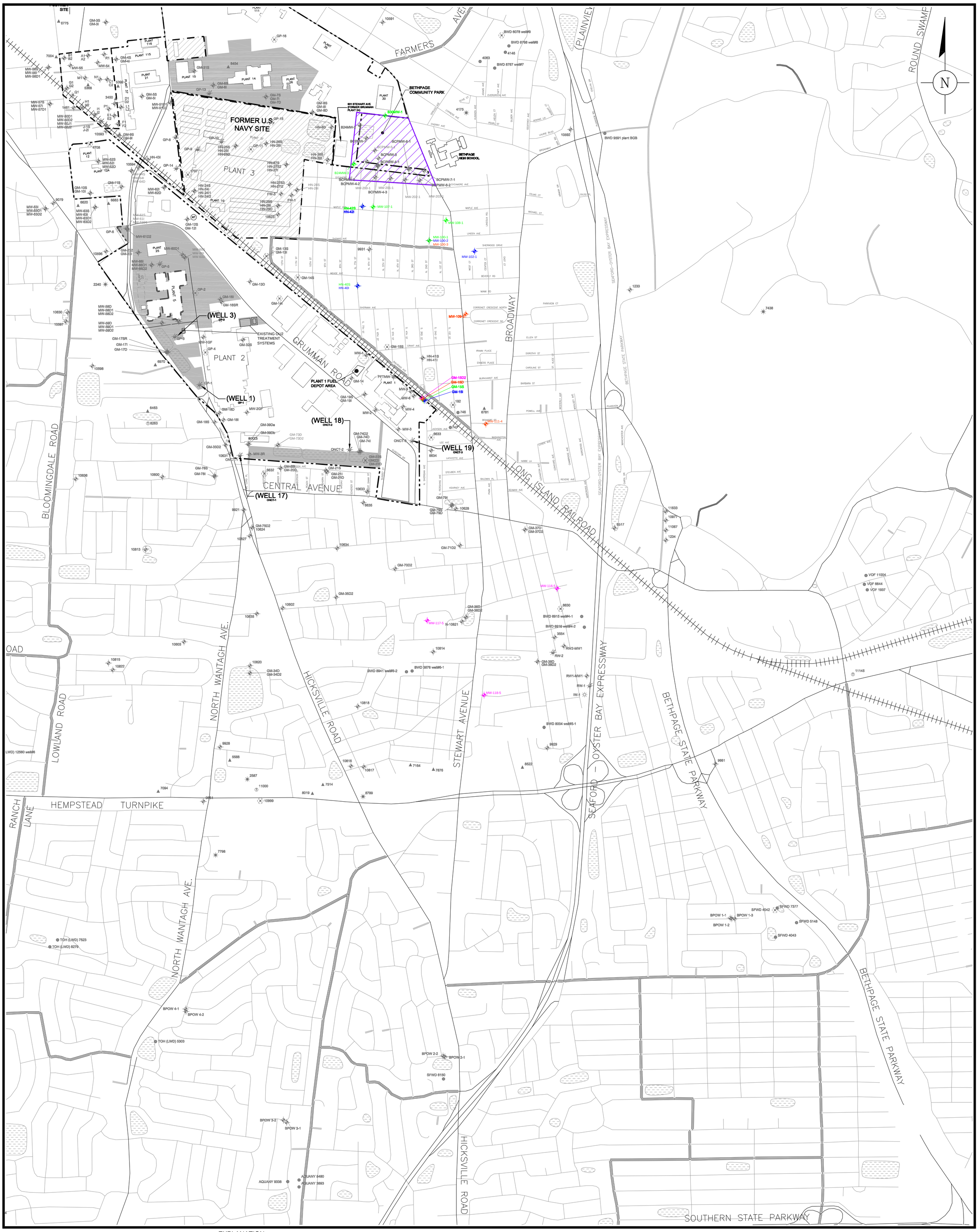
offsite



EXPLANATION:

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE PROPERTY
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY PROPERTY
- PROPERTY BOUNDARY OF THE FORMER OCC PROPERTY
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY
- DENOTES FORMER U.S. NAVY OWNED PROPERTY
- RECHARGE BASIN
- SITE AREA
- OBSERVATION, MONITORING WELL
- INDUSTRIAL WELL
- PUBLIC SUPPLY WELL
- IRRIGATION WELL
- INJECTION WELL
- NORTHROP GRUMMAN OR NAVY PRODUCTION WELL
- ABANDONED WELL

DESIGNATION OF HYDROGEOLOGIC ZONE FOR MONITORING WELL SCREENED INTERVALS (ARCADIS 2003)

- SHALLOW
- INTERMEDIATE
- DEEP
- DEEP2

NOTES:

1. HYDROGEOLOGIC ZONE BASED ON MODEL LAYER ELEVATIONS PRESENTED IN COMPREHENSIVE GROUNDWATER MODEL (ARCADIS 2003).

0 800' 1600'
SCALE IN FEET

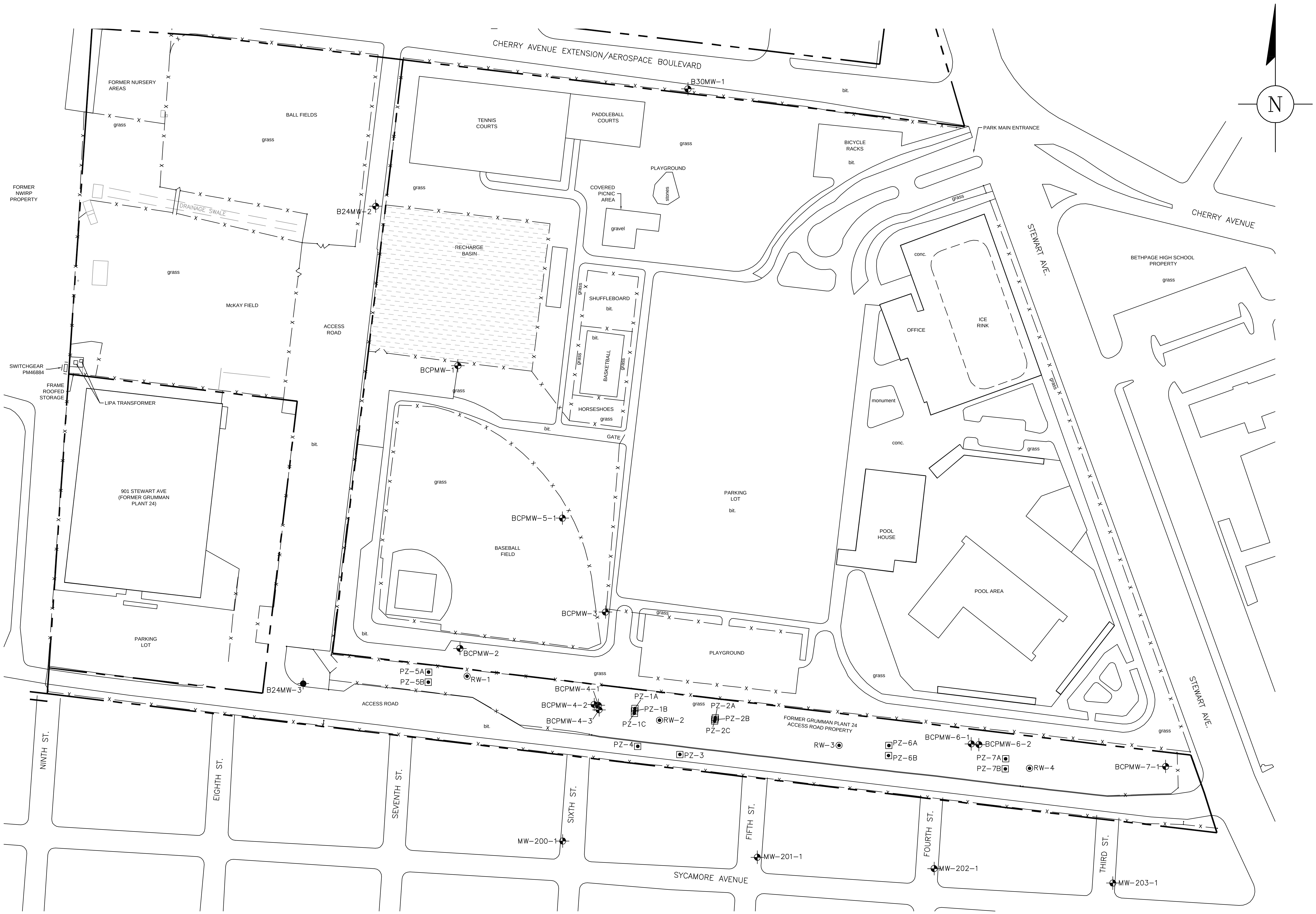
ALL COORDINATES REFERENCED TO NORTH AMERICAN DATUM 1983

NORTHROP GRUMMAN SYSTEMS CORPORATION
OPERABLE UNIT 3
(FORMER GRUMMAN SETTLING PONDS)
BETHPAGE, NEW YORK

STUDY AREA SHOWING MONITORING WELL LOCATIONS

ARCADIS

FIGURE
1



LEGEND:

NORTHROP GRUMMAN PROPERTY LINE

FENCE

BASIN

bit. BITUMINOUS PAVEMENT

BCPMW-1 MONITORING WELL

PZ-2C GROUNDWATER PIEZOMETER

RW-2 RECOVERY WELL

NOTES:

1. RECOVERY WELLS, MONITORING WELLS, AND PIEZOMETERS SURVEYED TO NORTH AMERICAN DATUM (NAD) 83.
2. PARK FEATURES SHOWN WERE PRESENT PRIOR TO TOWN OF OYSTER BAY REDEVELOPMENT IN 2005.

NORTHROP GRUMMAN SYSTEMS CORPORATION
OPERABLE UNIT 3
(FORMER GRUMMON SETTLING PONDS)
BETHPAGE, NEW YORK

ON-SITE WELL LOCATIONS

ARCADIS

FIGURE
2