ARCADIS Design & Consultancy for natural and built assets

Mr. Steven Scharf, P.E.
Project Engineer
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
Remedial Action, Bureau A
Albany, New York 12233-7015

Arcadis U.S., Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610
www.arcadis.com

ENVIRONMENT

Subject:
January to June 2016 Semi-Annual Progress Report
Northrop Grumman Systems Corporation
Operable Unit 3 (OU3), NYSDEC Site ID # 1-30-003A,
Bethpage, New York

Date:
July 11, 2016

Contact:
David Stern

Phone:
631-391-5284

Email:
David.Stern@arcadis.com

Our ref:
NY001496.0815.RPTB6

Dear Steve:

In accordance with Section III of Administrative Order on Consent (AOC) Index # W1-0018-04-01, and the May 2011 Work Plan for Modification of AOC Progress Report (work plan), this letter reports OU3 activities performed by Northrop Grumman Systems Corporation (Northrop Grumman) during January through June 2016. Activities planned for July through December 2016 are also summarized. In accordance with the approved work plan, these reports will be submitted to the NYSDEC on a semi-annual basis until it is determined that the reports are no longer necessary. The site plan showing well locations is provided on **Figure 1**.

OU3 ACTIVITIES CONDUCTED DURING JANUARY THROUGH JUNE 2016

Bethpage Park Soil Gas Containment System (Formerly Soil Gas IRM)

- Continued Operation, Maintenance, and Monitoring (OM&M) of the Bethpage Park Soil Gas Containment System (BPSGCS)
- Submitted BPSGCS 2015 Annual and First Quarter 2016 OM&M Reports (March and May 2016) to the NYSDEC

ED_002631A_00010687-00001

Bethpage Park Groundwater Containment System (Formerly Groundwater IRM)

- Continued OM&M of the Bethpage Park Groundwater Containment System (BPGWCS)
- Submitted the BPGWCS 2015 Annual and First Quarter 2016 OM&M Reports (March and May 2015) to the NYSDEC

Other

- Performed quarterly monitoring rounds for Monitoring Wells MW109-3 and MW111-4 and monthly monitoring rounds for Monitoring Well MW116-5 from January through June 2016. Validated data obtained from the January through June 2016 period are provided in Table 1.

OU3 ACTIVITIES SCHEDULED DURING JULY THROUGH DECEMBER 2016

Bethpage Park Soil Gas Containment System

- Continue OM&M of the BPSGCS
- Submit OU3 BPSGCS Second and Third Quarter 2016 Reports (August and November 2016) to the NYSDEC

Bethpage Park Groundwater Containment System

- Continue OM&M of the BPGWCS
- Submit OU3 BPGWCS Second and Third Quarter 2016 Reports (August and November 2016) to the NYSDEC

Other

- Perform quarterly monitoring rounds for Monitoring Wells MW109-3 and MW111-4 and monthly monitoring rounds for Monitoring Well MW116-5.

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:
S. Karpinski – NYSDOH
W. Parrish - NYSDEC
K. Smith, Northrop Grumman
E. Hannon, Northrop Grumman
F. Weber, Northrop Grumman
C. Henry, EMAGIN
C. Stein – USEPA
R. Alvey – USEPA
Bethpage Public Library – Public Repository
C. San Giovanni, Arcadis
M. Wolfert, Arcadis
File, Arcadis

Enclosures:

Tables

1 Concentrations of Volatile organic Compounds in Groundwater Samples Collected from Monitoring Wells

Figures

1 Site Plan

Table 1.
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Northrop Grumman Systems Corporation, Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Constituents (units in ug/L) / Location ID: / Sample Date:	MW-109-3 2/4/2016	MW-109-3 4/12/2016	MW-111-4 2/4/2016	MW-111-4 4/12/2016	MW-116-5 1/11/2016	MW-116-5 2/3/2016
1,1,1-Trichloroethane	<1.0	<4.0	**2.0 J**	<10	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<1.0	<4.0	<5.0	<10	<5.0	<5.0
1,1,2-Trichloroethane	**0.23 J**	<4.0	**1.2 J**	<10	**2.0 J**	**1.7 J**
1,1-Dichloroethane	**5.5**	**5.4**	**14.9**	**15**	**1.9 J**	**2.2 J**
1,1-Dichloroethene	**1.7**	<4.0	**7.8**	**9.5 J**	**3.7 J**	**3.6 J**
1,2-Dichloroethane	**1.3**	<4.0	**5.1**	**5.3 J**	**9.6**	**10.6**
1,2-Dichloropropane	<1.0	<4.0	<5.0	<10	<5.0	<5.0
2-Butanone	<10	<40	<50	<100	<50	<50
2-Hexanone	<5.0	<20	<25	<50	<25	<25
4-methyl-2-pentanone	<5.0	<20	<25	<50	<25	<25
Acetone	<10	<40	<50	<100	<50	<50
Benzene	<0.50	<2.0	<2.5	<5.0	<2.5	<2.5
Bromodichloromethane	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Bromoform	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Bromomethane	<2.0	<8.0	<10	<20	<10	<10
Carbon Disulfide	<2.0	<8.0	<10	<20	<10	<10
Carbon Tetrachloride	<1.0	<4.0	<5.0	<10	**1.2 J**	**1.6 J**
Chlorobenzene	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Chlorodifluoromethane (Freon 22)	**1.0 J**	<20	<25	<50	<25	<25
Chloroethane	<1.1	<4.0	<5.0	<10	<5.0	<5.0
Chloroform	**6.1**	**6.4**	**4.0 J**	**3.9 J**	**11.8**	**13.5**
Chloromethane	<1.0	<4.0	<5.0	<10	<5.0	<5.0
cis-1,2-dichloroethene	**401 D**	**417**	**1080 D**	**1100**	**173**	**196**
cis-1,3-dichloropropene	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Dibromochloromethane	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Dichlorodifluoromethane (Freon 12)	**1.1 J**	<8.0	<10	<20	<10	<10
Ethylbenzene	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Methylene Chloride	<2.0	<8.0	<10	<20	<10	<10
Styrene	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Tetrachloroethene	**2.8**	**2.5 J**	**13.3**	**14.3**	<5.0	<5.0
Toluene	<1.0	<4.0	<5.0	<10	<5.0	<5.0
trans-1,2-dichloroethene	**1.7**	**2.8 J**	**7.4**	<10	3.5 J	**4.1 J**
trans-1,3-dichloropropene	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Trichloroethylene	**589 D**	**582**	**2180 D**	**2350 D**	**1130 D**	**1390 D**
Trichlorotrifluoroethane (Freon 113)	<5.0	<20	<25	<50	<25	<25
Vinyl Chloride	**0.32 J**	<4.0	<5.0	<10	<5.0	<5.0
Xylene-o	<1.0	<4.0	<5.0	<10	<5.0	<5.0
Xylenes - m,p	<1.0	<4.0	<5.0	<10	<5.0	<5.0
TVOCs	**1000**	**1000**	**3300**	**3500**	**1300**	**1600**

See Notes and Abbreviations on Last Page

Table 1.
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Northrop Grumman Systems Corporation, Bethpage, New York

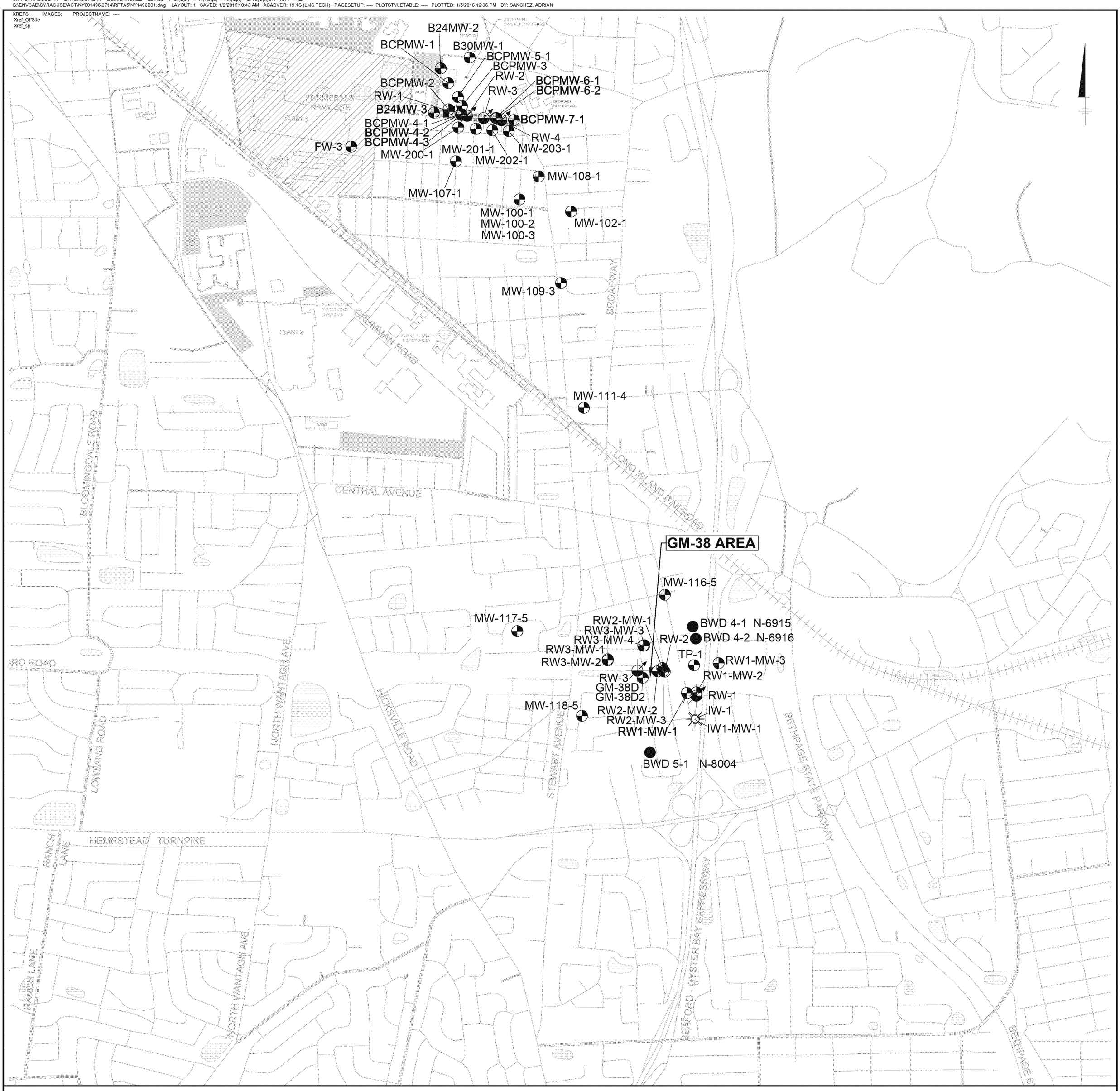
ARCADIS Design & Consultancy for natural and built assets

Constituents (units in ug/L)	Location ID: Sample Date:	MW-116-5 3/7/2016	MW-116-5 4/1/2016	MW-116-5 5/4/2016	MW-116-5 6/6/2016
1,1,1-Trichloroethane		**1.5 J**	<5.0	**1.7 J**	< 10
1,1,2,2-Tetrachloroethane		<5.0	<5.0	<5.0	< 10
1,1,2-Trichloroethane		**2.0 J**	**1.5 J**	**2.4 J**	< 10
1,1-Dichloroethane		**2.5 J**	**2.2 J**	**3.4 J**	**3.2 J**
1,1-Dichloroethene		**4.1 J**	**3.5 J**	**3.6 J**	**4.0 J**
1,2-Dichloroethane		**10.6**	**11.7**	**13.4**	**15.2**
1,2-Dichloropropane		**3.5 J**	**3.6 J**	**4.6 J**	**4.5 J**
2-Butanone		<50	<50	<50	< 100
2-Hexanone		<25	<25	<25	< 50
4-methyl-2-pentanone		<25	<25	<25	< 50
Acetone		<50	<50	<50	< 100
Benzene		<2.5	<2.5	<2.5	< 5.0
Bromodichloromethane		<5.0	<5.0	<5.0	< 10
Bromoform		<5.0	<5.0	<5.0	< 10
Bromomethane		<10	<10	<10	< 20
Carbon Disulfide		<10	<10	<10	< 20
Carbon Tetrachloride		**1.5 J**	**1.4 J**	<5.0	< 10
Chlorobenzene		<5.0	<5.0	<5.0	< 10
Chlorodifluoromethane (Freon 22)		<25	<25	<25	< 50
Chloroethane		<5.0	<5.0	<5.0	< 10
Chloroform		**14.4**	**14.7**	**17.2**	**16.4**
Chloromethane		<5.0	<5.0	<5.0	< 10
cis-1,2-dichloroethene		**216**	**187**	**239**	**241**
cis-1,3-dichloropropene		<5.0	<5.0	<5.0	< 10
Dibromochloromethane		<5.0	<5.0	<5.0	< 10
Dichlorodifluoromethane (Freon 12)		<10	<10	<10	< 20
Ethylbenzene		<5.0	<5.0	<5.0	< 10
Methylene Chloride		<10	<10	<10	< 20
Styrene		<5.0	<5.0	<5.0	< 10
Tetrachloroethene		<5.0	<5.0	<5.0	< 10
Toluene		<5.0	<5.0	<5.0	< 10
trans-1,2-dichloroethene		**5.1**	**7.2**	**16.6**	**6.3 J**
trans-1,3-dichloropropene		<5.0	<5.0	<5.0	< 10
Trichloroethylene		**1420D**	**1310D**	**1,570 D**	**1630**
Trichlorotrifluoroethane (Freon 113)		<25	<25	<25	< 50
Vinyl Chloride		<5.0	<5.0	<5.0	< 10
Xylene-o		<5.0	<5.0	<5.0	< 10
Xylenes - m,p		<5.0	<5.0	<5.0	< 10
TVOCs		**1700**	**1500**	**1900**	**1900**

See Notes and Abbreviations on Last Page

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\NY001496\0714\RPTA5\NY1496B01.dwg LAYOUT: 1 SAVED: 1/9/2015 10:43 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/5/2016 12:36 PM BY: SANCHEZ, ADRIAN

XREFS: IMAGES: PROJECTNAME: ----
Xref_OffSite
Xref_sp



EXPLANATION:

- 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

0 500' 1000' 2000'
APPROXIMATE SCALE IN FEET

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK

SITE PLAN
SHOWING OU3 WELL LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1