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ENVIRONMENT

Date:

October 10, 2016

Subject:

Third Quarter 2016 Progress Report
Northrop Grumman Systems Corporation
Operable Unit 2, NYSDEC Site ID # 1-30-003A,
Bethpage, New York

Contact:

David E. Stern

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631.391.5284

Email:

david.stern@arcadis.com

Our ref:

NY001496.0216.LARA5

Dear Henry and Steve:

In accordance with Appendix “A”, Section XIII of Administrative Order on Consent (AOC) Index # W1-118-14-12, this letter reports Operable Unit 2 (OU2) activities performed by Northrop Grumman Systems Corporation (Northrop Grumman) during the Third Quarter of 2016 (July through September 2016). Activities planned for Fourth Quarter (October through December 2016) are also described.

This progress report provides data that have been received as final and/or validated from the current period that are not included in other routine reporting for OU2 (e.g., quarterly reports as specified in the Groundwater Monitoring Plan).

As this is an ongoing remediation project, Northrop Grumman has transitioned the frequency of these progress reports from monthly to quarterly. Therefore, the next report will be submitted following the close of December 2016.

OU2 ACTIVITIES CONDUCTED DURING THIRD QUARTER 2016

OU2 On-Site Containment (ONCT) System

- Continued Operation, Maintenance and Monitoring (OM&M) of the OU2 ONCT system
- Completed Third Quarter 2016 ONCT system sampling

Regional Groundwater Monitoring & Outpost Well Monitoring

- Continued supplemental bi-weekly VOC sampling of Monitoring Well GM-21D2 and monthly VOC sampling of other selected wells, including ONCT Tower 102 system remedial wells
- Completed Second Quarter 2016 routine OU2 groundwater monitoring activities
- Completed annual well inspection event for non-routine monitoring wells
- Data not routinely reported are provided for the current period as follows:
    - Analytical data for GM-21D2 and other selected wells, including ONCT system remedial wells, and discharge sample for compliance with local POTW, are provided in Table 1.

Northrop Grumman Cooperation with Navy

- Coordinated with Navy for Third Quarter 2016 sampling of additional outpost wells and plume monitoring wells
- Coordinated, initiated and completed Third Quarter 2016 sampling of existing outpost wells now termed as plume monitoring wells (BPOW2-1, BPOW2-2 and BPOW2-3) and additional outpost wells (BPOW5 and BPOW6 clusters)
- Prepared and submitted Second Quarter 2016 Report for Navy owned wells, including Form 1 packages

Other

- Prepared and submitted Second Quarter 2016 OU2 Operation Maintenance and Monitoring Report
- Prepared and submitted the June 2016 AOC monthly progress report

OU2 ACTIVITIES SCHEDULED FOR FOURTH QUARTER 2016

OU2 On-Site Containment (ONCT) System

- Continue OM&M of OU2 ONCT system
- Conduct Fourth Quarter ONCT system sampling

Regional Groundwater Monitoring & Outpost Well Monitoring

- Continue supplemental VOC sampling at Monitoring Well GM-21D2. Other select wells, including ONCT system remedial wells, to return to quarterly/semi-annual frequency as per OM&M Manual and Groundwater Monitoring Plan.
- Initiate and complete Fourth Quarter 2016 routine groundwater monitoring activities including water level collection on a semi-annual basis and sampling of monitoring wells

Northrop Grumman Cooperation with Navy

- Complete Fourth Quarter 2016 sampling of additional outpost wells and plume monitoring wells

Other

- Submit the Third Quarter AOC quarterly progress report

Sincerely,

Arcadis of New York, Inc.

David E. Stern

Senior Hydrogeologist/Associate Project Manager

Enclosures

Copies:
Krista Anders, NYSDOH
Rosalie K. Rusinko, Esq., NYSDEC
Edward J. Hannon, Northrop Grumman
Fred Weber, Northrop Grumman

Mr. Henry Wilkie
Mr. Steven Scharf, P.E.
October 10, 2016

Jill Palmer, Esq., Northrop Grumman
Daniel Riesel, Esq., Sive, Paget & Riesel, P.C.
Mark A. Chertok, Esq., Sive, Paget & Riesel, P.C.
Lora Fly, NAVFAC Mid-Atlantic Environmental
Bethpage Public Library, Public Repository
Chris Engler, PE, Arcadis
Carlo San Giovanni, Arcadis
Mike Wolfert, Arcadis
File, Arcadis

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	DISCHARGE(3) / DISCHARGE_062116 / 6/21/2016	GM-21D2 / GM-21D2_20160617 / 6/17/2016	GM-21D2 / GM-21D2_20160705 / 7/5/2016	GM-21D2 / GM-21D2_20160726 / 7/26/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		< 1.0	**0.69 J**	**0.54 J**	**0.48 J**
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 2.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	**1.3**	**1.0**	**0.76 J**
1,1-Dichloroethene		< 1.0	**2.4**	**2.5**	**2.5**
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 5.0	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 5.0	< 10	< 10	< 10
Benzene		< 1.0	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 1.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 1.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		< 2.0	--	--	--
CFC-12		< 2.0	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	**3.6**	**2.7**	**2.1**
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 1.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		< 1.0	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 2.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	**4.3**	**6.1**	**5.4**
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	**63.2**	**60.1**	**52.0**
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		0	**76**	**73**	**63**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	GM-21D2 / GM-21D2_20160809 / 8/9/2016	GM-21D2 / GM-21D2_20160826 / 8/26/2016	GM-21D2 / REP061716MO1 / 6/17/2016	GM-73D2 / GM-73D2_20160620 / 6/20/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		**0.29 J**	**0.37 J**	**0.70 J**	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		**0.51 J**	**0.56 J**	**1.3**	**0.39 J**
1,1-Dichloroethene		**1.5**	**1.5**	**3.1**	**0.53 J**
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	**0.40 J**
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		**1.5**	**1.5**	**3.6**	**0.65 J**
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		**5.0**	**4.4**	**4.4**	**2.3**
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		**41.6**	**41.9**	**64.1**	**36.9**
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		**50**	**50**	**78**	**41**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	GM-73D2 / GM-73D2_20160727 / 7/27/2016	GM-73D2 / GM-73D2_20160825 / 8/25/2016	GM-74D2 / GM-74D2_20160620 / 6/20/2016	GM-74D2 / GM-74D2_20160727 / 7/27/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		**0.47 J**	**0.54 J**	**0.43 J**	**0.55 J**
1,1-Dichloroethene		**0.60 J**	**0.92 J**	**0.59 J**	**0.73 J**
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		**0.53 J**	**0.66 J**	< 1.0	**0.24 J**
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		**0.58 J**	**0.70 J**	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		**2.5**	**2.9**	**3.0**	**3.9**
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		**42.7**	**46.0**	**6.6**	**7.9**
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		**48**	**52**	**11**	**13**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	GM-74D2 / GM-74D2_20160825 / 8/25/2016	QAQC / TB061716MO1 / 6/17/2016	QAQC / TB-062016-KD-1 / 6/20/2016	QAQC / TB062016MO1 / 6/20/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		**0.56 J**	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		**1.1**	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		**0.32 J**	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		**4.2**	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		**10.0**	< 1.0	< 1.0	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		**16**	0	0	0

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	QAQC TB070516PP1 7/5/2016	QAQC TB-070716-KD-1 7/7/2016	QAQC TB-071416-KD-1B 7/14/2016	QAQC TB-072116-KD-1 7/21/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 0.50
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 2.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 5.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 2.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 2.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 0.50
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 10
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 5.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 0.50
Trichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		0	0	0	0

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	QAQC TB072616AR1 7/26/2016	QAQC TB072716AR1 7/27/2016	QAQC TB080916MO1 8/9/2016	QAQC TB082516MD1 8/25/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		0	0	0	0

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	QAQC TB082616MO1 8/26/2016	QAQC FB061716MO1 6/17/2016	QAQC FB070516PP1 7/5/2016	QAQC FB072616AR1 7/26/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	**4.7 J**	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		0	**5.0**	0	0

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	QAQC FB080916MO1 8/9/2016	QAQC FB082616MO1 8/26/2016	WELL 1 WELL 1_20160707 7/7/2016	WELL 17 WELL 17_20160620 6/20/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		< 1.0	< 1.0	**0.46 J**	**0.39 J**
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	**4.2 J**	**4.3 J**
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	**0.87 J**	**1.0**
1,1-Dichloroethene		< 1.0	< 1.0	**2.3**	**2.0**
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	**4.5**	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	**0.30 J**	**0.34 J**
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	**4.6**	**3.3**
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	**31.7**	**25.8**
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	< 1.0	**785**	**144**
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		0	0	**830**	**180**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	WELL 17 WELL 17_20160714 7/14/2016	WELL 18 WELL 18_20160620 6/20/2016	WELL 18 WELL 18_20160714 7/14/2016	WELL 19 WELL 19_20160620 6/20/2016
Volatile Organic Compounds (1)					
1,1,1-Trichloroethane		**0.32 J**	**0.62 J**	**0.49 J**	**0.41 J**
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		**4.3 J**	**1.7 J**	**1.7 J**	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		**0.98 J**	**1.3**	**1.3**	**0.82 J**
1,1-Dichloroethene		**1.8**	**1.7**	**3.4**	**1.7**
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		--	--	--	--
CFC-12		--	--	--	--
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		**0.31 J**	< 1.0	< 1.0	**0.44 J**
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		**3.2**	**2.3**	**2.2**	**19.1**
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		--	--	--	--
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		**24.8**	**12.6**	**12.2**	**6.7**
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		**142**	**48.3**	**48.6**	**148**
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs(2)		**180**	**69**	**70**	**180**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	WELL 19 / WELL 19_20160721 / 7/21/2016	WELL 3R / WELL 3R_20160707 / 7/7/2016
Volatile Organic Compounds (1)			
1,1,1-Trichloroethane		< 1.0	**1.0**
1,1,2,2-Tetrachloroethane		< 0.50	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		**1.5 J**	**6.1**
1,1,2-Trichloroethane		< 1.0	< 1.0
1,1-Dichloroethane		**0.85 J**	**1.6**
1,1-Dichloroethene		**2.2**	**5.7**
1,2-Dichloroethane		< 1.0	< 1.0
1,2-Dichloropropane		< 2.0	< 1.0
2-Butanone (MEK)		< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0
Acetone		< 10	< 10
Benzene		< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0
Bromoform		< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0
Carbon Disulfide		< 5.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0
CFC-11		--	--
CFC-12		--	--
Chlorobenzene		< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0
Chloroethane		< 2.0	< 1.0
Chloroform		**0.47 J**	**0.34 J**
Chloromethane		< 2.0	< 1.0
cis-1,2-Dichloroethene		**20.0**	**5.4**
cis-1,3-Dichloropropene		< 0.50	< 1.0
Dichloromethane		< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 10	< 5.0
Methyl-tert-butylether		--	--
o-Xylene		< 1.0	< 1.0
Styrene (Monomer)		< 5.0	< 1.0
Tetrachloroethene		**8.1**	**39.5**
Toluene		< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0
trans-1,3-Dichloropropene		< 0.50	< 1.0
Trichloroethene		**168**	**555**
Vinyl chloride		< 1.0	**6.5**
Total VOCs(2)		**200**	**620**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Notes and Abbreviations:

(1) Sample analysis by VOC Method 8260C, unless otherwised noted.

(2) Results rounded to two significant figures.

(3) Sample analysis by VOC Method 624.

Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2016), or as received as final from the laboratory as of the end of the AOC reporting period.

Bold value indicates a detection

--	Not analyzed
µg/L	Micrograms per liter
<5.0	Constituent not detected above its laboratory quantification limit.
CFC	Chlorofluorocarbon
FB	Field Blank
J	Value is estimated concentration
QAQC	Quality Assurance/Quality Control sample
REP/DUP	Blind duplicate sample
TB	Trip blank