

Mr. Henry Wilkie
Project Manager
New York State Department of Environmental Conservation
Remedial Bureau A
625 Broadway
Albany, New York 12233-7015

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

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

ENVIRONMENT

Date:

May 10, 2016

Subject:

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

Contact:

David E. Stern

Phone:

631.391.5284

Dear Henry and Steve:

Email:

david.stern@arcadis.com

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 month of April 2016. Activities planned for May 2016 are also described.

Our ref:

NY001496.0115.LARA5

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).

Because this is an ongoing remediation project, Northrop Grumman proposes that future progress reports be submitted quarterly.

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

OU2 ACTIVITIES CONDUCTED DURING APRIL 2016

OU2 On-Site Containment (ONCT) System

- Continued Operation, Maintenance and Monitoring (OM&M) of the OU2 ONCT system

Regional Groundwater Monitoring & Outpost Well Monitoring

- Continued supplemental bi-weekly VOC sampling and monthly water level monitoring of Monitoring Well GM-21D2 and other selected wells, including ONCT Tower 102 system remedial 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 treated groundwater effluents are provided in Table 1.

Northrop Grumman Cooperation with Navy

- Coordinated with Navy for Second Quarter 2016 sampling of additional outpost wells and plume monitoring wells
- Prepared and submitted to Navy First Quarter 2016 data report for Navy-owned additional outpost wells

Other

- Prepared and submitted the March 2016 AOC monthly progress report
- Provided sampling field support to NYSDEC as part of NYSDEC's Phase 2 Radiological Sampling Plan
- Coordination and performance of supplemental sampling of Plainview Water District Wells (N-6077 and N-6580) as a part of NYSDEC's Phase 2 Radiological Sampling Plan

OU2 ACTIVITIES SCHEDULED FOR MAY 2016

OU2 On-Site Containment (ONCT) System

- Continue OM&M of OU2 ONCT system
- Prepare and submit First Quarter 2016 OU2 Operation Maintenance and Monitoring Report

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

- Conduct Second Quarter 2016 OU2 treatment system sampling activities

Regional Groundwater Monitoring & Outpost Well Monitoring

- Continue supplemental bi-weekly VOC sampling and monthly water levels of Monitoring Well GM-21D2 and other select wells, including ONCT system remedial wells
- Conduct Second Quarter 2016 routine OU2 groundwater monitoring activities

Northrop Grumman Cooperation with Navy

- Conduct Second Quarter 2016 groundwater monitoring activities at Navy-owned outpost and plume monitoring wells

Other

- Submit the April 2016 AOC monthly 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
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
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Table 1.
Concentrations of Volatile Organic Compounds
in Samples Validated in April 2016
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: Sample ID: Sample Date:	96 EFFLUENT T96 EFFLUENT_20160411 4/11/2016	GM-21D2 GM-21D2_20160325 3/25/2016	GM-21D2 GM-21D2_20160407 4/7/2016	GM-21D2 REP040716MO1 4/7/2016
<u>Volatile Organic Compounds⁽¹⁾</u>					
1,1,1-Trichloroethane		<1.0	1.6	1.6	1.6
1,1,2,2-Tetrachloroethane		<0.50	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		<5.0	3.3 J	2.1 J	2.1 J
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		<1.0	5.4	4.2	4.4
1,1-Dichloroethene		<1.0	12.9	10.2	10.3
1,2-Dichloroethane		<1.0	0.34 J	0.23 J	<1.0
1,2-Dichloropropane		<2.0	<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		<5.0	<2.0	<2.0	<2.0
Carbon Tetrachloride		<1.0	<1.0	<1.0	<1.0
Chlorobenzene		<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane		<1.0	<1.0	<1.0	<1.0
Chloroethane		<2.0	<1.0	<1.0	<1.0
Chloroform		<1.0	0.35 J	0.30 J	0.33 J
Chloromethane		<2.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		0.33 J	15.8	11.6	12.0
cis-1,3-Dichloropropene		<0.50	<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-Xylene		<1.0	<1.0	<1.0	<1.0
Methyl N-Butyl Ketone (2-Hexanone)		<10	<5.0	<5.0	<5.0
o-Xylene		<1.0	<1.0	<1.0	<1.0
Styrene (Monomer)		<5.0	<1.0	<1.0	<1.0
Tetrachloroethene		<1.0	8.2	7.3	7.3
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		<0.50	<1.0	<1.0	<1.0
Trichloroethene		3.3	117	112	110
Vinyl chloride		<1.0	<1.0	<1.0	<1.0
Total VOCs⁽²⁾		3.6	160	150	150

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
in Samples Validated in April 2016
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_20160324 3/24/2016	GM-73D2 GM-73D2_20160407 4/7/2016	GM-74D2 GM-74D2_20160324 3/24/2016	GM-74D2 GM74D2_20160412 4/12/2016
<u>Volatile Organic Compounds</u> ⁽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	0.74 J	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		0.37 J	0.32 J	0.49 J	0.39 J
1,1-Dichloroethene		0.51 J	<1.0	0.91 J	0.80 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
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		0.25 J	0.22 J	0.26 J	0.20 J
Chloromethane		<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		0.36 J	0.49 J	0.29 J	0.34 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-Xylene		<1.0	<1.0	<1.0	<1.0
Methyl N-Butyl Ketone (2-Hexanone)		<5.0	<5.0	<5.0	<5.0
o-Xylene		<1.0	<1.0	<1.0	<1.0
Styrene (Monomer)		<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		1.3	1.7	3.4	4.1
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		30.2	36.5	7.2	7.9
Vinyl chloride		<1.0	<1.0	<1.0	<1.0
Total VOCs ⁽²⁾		33	39	13	14

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
in Samples Validated in April 2016
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: Sample ID: Sample Date:	Trip Blank TB032416MO1 3/24/2016	Trip Blank TB032516MO1 3/25/2016	Trip Blank TB-032916-CA2 3/29/2016	Trip Blank TB040716MO1 4/7/2016
<u>Volatile Organic Compounds</u>⁽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
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-Xylene		<1.0	<1.0	<1.0	<1.0
Methyl N-Butyl Ketone (2-Hexanone)		<5.0	<5.0	<5.0	<5.0
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
in Samples Validated in April 2016
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Constituents (units in µg/L)	Well ID: Sample ID: Sample Date:	Trip Blank TB-041116-KD-1 4/11/2016	Field Blank FB032516MO1 3/25/2016	Field Blank FB040716MO1 4/7/2016	WELL 1 WELL 1_20160411 4/11/2016
Volatile Organic Compounds⁽¹⁾					
1,1,1-Trichloroethane		<0.50	<1.0	<1.0	<2.0
1,1,2,2-Tetrachloroethane		--	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		<0.50	<5.0	<5.0	3.2 J
1,1,2-Trichloroethane		--	<1.0	<1.0	<2.0
1,1-Dichloroethane		--	<1.0	<1.0	<2.0
1,1-Dichloroethene		<0.50	<1.0	<1.0	2.4
1,2-Dichloroethane		--	<1.0	<1.0	<2.0
1,2-Dichloropropane		--	<1.0	<1.0	4.3
2-Butanone (MEK)		--	<10	<10	17.7 J
4-Methyl-2-Pentanone		--	<5.0	<5.0	<10
Acetone		--	<10	<10	<20
Benzene		--	<0.50	<0.50	<1.0
Bromodichloromethane		--	<1.0	<1.0	<2.0
Bromoform		--	<1.0	<1.0	<2.0
Bromomethane		--	<2.0	<2.0	<4.0
Carbon Disulfide		--	<2.0	<2.0	<10
Carbon Tetrachloride		--	<1.0	<1.0	<2.0
Chlorobenzene		--	<1.0	<1.0	<2.0
Chlorodibromomethane		--	<1.0	<1.0	<2.0
Chloroethane		--	<1.0	<1.0	<4.0
Chloroform		--	<1.0	<1.0	<2.0
Chloromethane		--	<1.0	<1.0	<4.0
cis-1,2-Dichloroethene		<0.50	<1.0	<1.0	4.1
cis-1,3-Dichloropropene		--	<1.0	<1.0	<1.0
Dichloromethane		<0.50	<2.0	<2.0	<4.0
Ethylbenzene		--	<1.0	<1.0	<2.0
m,p-Xylene		--	<1.0	<1.0	<2.0
Methyl N-Butyl Ketone (2-Hexanone)		--	<5.0	<5.0	<20
o-Xylene		--	<1.0	<1.0	<2.0
Styrene (Monomer)		--	<1.0	<1.0	<10
Tetrachloroethene		<0.50	<1.0	<1.0	23.5
Toluene		--	<1.0	<1.0	<2.0
trans-1,2-Dichloroethene		<0.53	<1.0	<1.0	<2.0
trans-1,3-Dichloropropene		--	<1.0	<1.0	<1.0
Trichloroethene		<0.50	<1.0	<1.0	691
Vinyl chloride		<0.50	<1.0	<1.0	<2.0
Total VOCs⁽²⁾		0	0	0	750

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
in Samples Validated in April 2016
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Well ID: Sample ID: (units in µg/L) Sample Date:	WELL 17 WELL 17_20160329 3/29/2016	WELL 17 WELL 17_20160411 4/11/2016	WELL 18 WELL 18_20160329 3/29/2016	WELL 18 WELL 18_20160411 4/11/2016
Volatile Organic Compounds⁽¹⁾				
1,1,1-Trichloroethane	0.49 J	<1.0	0.71 J	0.73 J
1,1,2,2-Tetrachloroethane	<1.0	<0.50	<1.0	<0.50
1,1,2-trichloro-1,2,2-trifluoroethane	4.8 J	4.5 J	1.9 J	1.9 J
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	1.2	1.1	1.5	1.5
1,1-Dichloroethene	2.6	2.0	2.8	3.8
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<2.0	<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	<5.0	<2.0	<5.0
Carbon Tetrachloride	0.22 J	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<2.0	<1.0	<2.0
Chloroform	0.41 J	0.43 J	0.29 J	<1.0
Chloromethane	<1.0	<2.0	<1.0	<2.0
cis-1,2-Dichloroethene	3.8	3.2	2.4	2.1
cis-1,3-Dichloropropene	<1.0	<0.50	<1.0	<0.50
Dichloromethane	<2.0	<2.0	<2.0	<2.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0
m,p-Xylene	<1.0	<1.0	<1.0	<1.0
Methyl N-Butyl Ketone (2-Hexanone)	<5.0	<10	<5.0	<10
o-Xylene	<1.0	<1.0	<1.0	<1.0
Styrene (Monomer)	<1.0	<5.0	<1.0	<5.0
Tetrachloroethene	28.7	23.0	14.7	11.8
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	<0.50	<1.0	<0.50
Trichloroethene	167	161	56.9	51.9
Vinyl chloride	<1.0	<1.0	<1.0	<1.0
Total VOCs⁽²⁾	210	200	81	73

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
in Samples Validated in April 2016
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Well ID: Constituents (units in µg/L)	Sample ID: Sample Date:	WELL 19 WELL 19_20160329 3/29/2016	WELL 19 DUP-041116-KD-1 4/11/2016	WELL 19 WELL 19_20160411 4/11/2016	WELL 3R WELL 3R_20160411 4/11/2016
Volatile Organic Compounds⁽¹⁾					
1,1,1-Trichloroethane		0.40 J	<1.0	<1.0	<2.0
1,1,2,2-Tetrachloroethane		<1.0	<0.50	<0.50	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		1.0 J	1.0 J	1.1 J	3.6 J
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<2.0
1,1-Dichloroethane		0.83 J	0.85 J	0.78 J	1.5 J
1,1-Dichloroethene		1.5	0.83 J	1.1	3.7
1,2-Dichloroethane		0.43 J	<1.0	<1.0	<2.0
1,2-Dichloropropane		<1.0	<2.0	<2.0	<4.0
2-Butanone (MEK)		<10	<10	<10	15.3 J
4-Methyl-2-Pentanone		<5.0	<5.0	<5.0	<10
Acetone		<10	<10	<10	<20
Benzene		<0.50	<0.50	<0.50	<1.0
Bromodichloromethane		<1.0	<1.0	<1.0	<2.0
Bromoform		<1.0	<1.0	<1.0	<2.0
Bromomethane		<2.0	<2.0	<2.0	<4.0
Carbon Disulfide		<2.0	<5.0	<5.0	<10
Carbon Tetrachloride		<1.0	<1.0	<1.0	<2.0
Chlorobenzene		<1.0	<1.0	<1.0	<2.0
Chlorodibromomethane		<1.0	<1.0	<1.0	<2.0
Chloroethane		<1.0	<2.0	<2.0	<4.0
Chloroform		0.47 J	0.53 J	0.46 J	<2.0
Chloromethane		<1.0	<2.0	<2.0	<4.0
cis-1,2-Dichloroethene		17.7	18.0	16.2	4.1
cis-1,3-Dichloropropene		<1.0	<0.50	<0.50	<1.0
Dichloromethane		<2.0	<2.0	<2.0	<4.0
Ethylbenzene		<1.0	<1.0	<1.0	<2.0
m,p-Xylene		<1.0	<1.0	<1.0	<2.0
Methyl N-Butyl Ketone (2-Hexanone)		<5.0	<10	<10	<20
o-Xylene		<1.0	<1.0	<1.0	<2.0
Styrene (Monomer)		<1.0	<5.0	<5.0	<10
Tetrachloroethene		6.2	6.0	6.2	23.6
Toluene		<1.0	<1.0	<1.0	<2.0
trans-1,2-Dichloroethene		<1.0	0.67 J	<1.0	<2.0
trans-1,3-Dichloropropene		<1.0	<0.50	<0.50	<1.0
Trichloroethene		141	167	160	512
Vinyl chloride		<1.0	<1.0	<1.0	10.4
Total VOCs⁽²⁾		170	190	190	570

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
in Samples Validated in April 2016,
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Notes and Abbreviations:

(1) Sample analysis by VOC Method 8260C, except for Trip Blank on April 11, 2016 which was by VOC Method 624.

(2) Results rounded to two significant figures.

Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2014), or as received as final from the laboratory as of the end of April 2016.

Bold value indicates a detection

-- Not analyzed

µg/L Micrograms per liter

<5.0 Constituent not detected above its laboratory quantification limit.

TB Trip blank

FB Field Blank

J Value is estimated concentration

REP/DUP Blind duplicate sample