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Date: April 26, 2024
Our Ref: 30188750
Subject: July to December 2023 Semi-Annual Progress Report
Northrop Grumman Systems Corporation
Operable Unit 3 (OU3),
Bethpage, New York
NYSDEC Site ID # 1-30-003A,

Dear Sarah,

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 report describes OU3 activities performed by Northrop Grumman from July through December 2023. Activities planned for January through June 2024 are also summarized. In accordance with the approved work plan, these reports are to be submitted to the NYSDEC on a semi-annual basis until it is determined that the reports are no longer necessary. With the startup of RW-21 remedial treatment system, Northrop Grumman intends to increase the frequency of these submittal to quarterly. The site plan showing well locations is provided on **Figure 1**.

OU3 Activities Conducted During July Through December 2023

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 OU3 BPSGCS Second Quarter 2023 and Third Quarter 2023 Reports (August and November 2023 respectively) to the NYSDEC.
- Shutdown instances this period are summarized below. In each instance the system was fully restored following shutdown.
    - 22.5-hour shutdown on 10/4/23 through 10/5/23 due to a heat exchanger fault.
    - 2.5-hour shutdown on 10/10/23 due to electrical work.
    - 3-hour shutdown on 12/13/23 due to the PLC upgrade.
    - 24-hour shutdown on 12/14/23 through 12/15/23 due to the PLC upgrade.
    - 1-hour shutdown on 12/15/23 due to the PLC upgrade.

Bethpage Park Groundwater Containment System (Formerly Groundwater IRM)

- Continued OM&M of the Bethpage Park Groundwater Containment System (BPGWCS).

- Replaced pumps in additional recovery wells BCPMW-4-1 and BCPMW-4-2 in November 2023.
- Installed liquid phase granular activated carbon treatment to the BPGWCS effluent to address polychlorinated biphenyls (PCBs) detected in SPDES samples.
- Submitted OU3 BPGWCS Second Quarter 2023 and Third Quarter 2023 Reports (August and November 2023 respectively) to the NYSDEC.
- Significant shutdown instances this period are summarized below. In each instance the system was fully restored following shutdown.
    - 23.5-hour shutdown on 6/11/23 through 6/12/23 due to an air stripper low pressure alarm.
    - 8-hour shutdown on 6/16/23 due to a bag filter pressure alarm.
    - 42-hour shutdown on 6/17/23 to 6/19/23 due to bag filter issues.
    - 0.5-hour shutdown on 6/20/23 due to an air stripper pressure alarm.
    - 73-hour shutdown on 6/24/23 through 6/27/23 due to the PLC board failure. The PLC board was replaced.
    - 0.5-hour shutdown on 6/30/23 due to a high pressure alarm.
    - 28.5-hour shutdown on 7/2/23 through 7/3/23 due to a high pressure alarm.
    - 2.5-hour shutdown on 7/6/23 due to bag filter issue.
    - 0.5-hour shutdown on 8/30/23 due to a sump high level alarm.
    - 26.5-hour shutdown on 9/17/23 through 9/18/23 due to the air stripper high pressure alarm.
    - 1.5-hour shutdown on 10/5/23 due to a ball valve replacement and inspections.
    - 2.5-hour shutdown on 10/10/23 due to electrical work.
    - 27-hour shutdown on 10/10/23 through 10/12/23 due to electrical work.
    - 5-hour shutdown on 10/30/23 due to maintenance on BCPMW-4-1 and BCPMW-4-2.
    - 3-hour shutdown on 11/20/23 due to an RW-2 low flow alarm.
    - 23.5-hour shutdown on 12/13/23 through 12/14/23 due to the PLC upgrade.
    - 1-hour shutdown on 12/15/23 due to the PLC upgrade.

RW-21 Project Area

- Completed construction and start-up of the RW-21 remedial treatment system. Full time operation began on August 2, 2023.
- Performed Third and Fourth Quarter 2023 monitoring of Wells MW-109-3 and MW-111-4 in August and December 2023.
- Performed monthly monitoring of Well MW-116-5 from June through August 2023. The sampling schedule for Well MW-116-5 was changed from monthly to quarterly at the direction of Northrop Grumman after the August 2023 sampling event (completed on 9/1/2023). Additionally, the June 2023 MW-116-5 validated data is also provided in this Report. Well MW-116-5 was sampled in September 2023 as part of the RW-21 Third Quarter 2023 and in December 2023 as part of the RW-21 Fourth Quarter Post Start-up Long Term Groundwater Monitoring and Sampling Events.
- Results for validated data following protocols as specified in the March 2006 RI/FS Work Plan (ARCADIS G&M, Inc 2006) for the July through December 2023 period are provided in **Table 1,** and well locations are shown on **Figure 1.**

- Completed the RW-21 Third Quarter 2023 Post Start-up Long Term Groundwater Monitoring and Sampling Event in September – October 2023 following system start-up in August 2023.
- Completed the RW-21 Fourth Quarter 2023 Post Start-up Long Term Groundwater Monitoring and Sampling Event in December 2023.

OU3 Activities Scheduled For January Through June 2024

Bethpage Park Soil Gas Containment System

- Continue OM&M of the BPSGCS.
- Submit OU3 BPSGCS 2023 Annual and 2024 First Quarter OM&M Reports (March and May 2024, respectively) to the NYSDEC.

Bethpage Park Groundwater Containment System

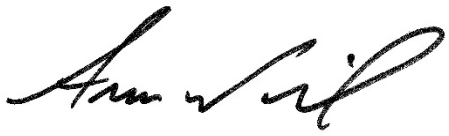
- Continue OM&M of the BPGWCS.
- Continue operation of BCPMW-4-1 and BCPMW-4-2 as additional recovery wells to the BPGWCS.
- Submit OU3 BPGWCS 2023 Annual and 2024 First Quarter OM&M Reports (March and May 2024, respectively) to the NYSDEC.

RW-21 Project Area

- Continue OM&M of the RW-21 remedial treatment system.
- Continue quarterly monitoring of Monitoring Wells MW-109-3, MW-111-4, and MW-116-5.
- Continue monthly monitoring of Monitoring Wells RW-21_MW-13, RW-21_MW-15 and RW-21_MW-16.
- Complete data validation as specified in the QAPP for the 2023 sample period.
- Complete RW-21 First Quarter 2024 Post Start-up Long Term Groundwater Monitoring and Sampling Event.
- Prepare and submit the First Quarter 2024 Post Start-up Long Term Groundwater Monitoring Report.

Feel free to call us if you have any questions.

Sincerely,
Arcadis of New York, Inc.



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Enclosures:

Tables

1 Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells

Figure

1 Site Plan Showing OU3 Well Locations

Tables

Table 1.
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells
Operable Unit 3
Northrop Grumman
Bethpage, New York

Constituents units in (ug/L)	Location ID: Sample ID: Date:	MW-109-3 8/29/2023 MW-109-3	MW-109-3 9/27/2023 MW-109-3	MW-109-3 9/27/2023 REP092723SH1	MW-109-3 11/30/2023 MW-109-3	MW-111-4 8/29/2023 MW-111-4	MW-111-4 9/27/2023 MW-111-4	MW-111-4 12/6/2023 MW-111-4	MW-116-5 6/26/2023 MW-116-5	MW-116-5 7/17/2023 MW-116-5	MW-116-5 9/1/2023 MW-116-5	MW-116-5 9/28/2023 MW-116-5
VOCs	**Cas RN**											
1,1,1-Trichloroethane	71-55-6	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1	< 5.0	**0.73 J**	**0.79 J**	< 5.0	< 20	**1.4 J**	**1.4 J**	< 50	< 50	< 50	< 25
1,1,2-Trichloroethane	79-00-5	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	0.61 J	< 10	< 10	< 10	**4.1 J**
1,1-Dichloroethane	75-34-3	**1.7**	**1.5**	**1.8**	**2.4**	**5.3**	**5.2**	**7.0**	**17.7**	**23.3**	**25.9**	**22.7**
1,1-Dichloroethene	75-35-4	**0.63 J**	**0.68 J**	**0.64 J**	**0.74 J**	< 4.0	**3.7**	**3.2**	**23.2**	**28.7**	**30.8**	**27.7**
1,2-Dichloroethane	107-06-2	**0.61 J**	< 1.0	**0.79 J**	**0.85 J**	< 4.0	**1.8**	**2.6**	**31.8**	**36.2**	**30.5**	**32.1**
1,2-Dichloropropane	78-87-5	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	0.81 J	< 10	**7.6 J**	**7.9 J**	**9.2**
1,3-Butadiene	106-99-0	< 5.0	< 5.0	< 5.0	< 5.0	< 20	< 5.0	< 5.0	< 50	< 50	< 50	< 25
1-Chloro-1,1-difluoroethane	75-68-3	< 5.0	< 5.0	< 5.0	< 5.0	< 20	< 5.0	< 5.0	< 50	< 50	< 50	< 25
2-Butanone (MEK)	78-93-3	< 10	< 10	< 10	< 10	< 40	< 10	< 10	< 100	< 100	< 100	< 50
4-Methyl-2-Pentanone	108-10-1	< 5.0	< 5.0	< 5.0	< 5.0	< 20	< 5.0	< 5.0	< 50	< 50	< 50	< 25
Acetone	67-64-1	< 10	< 10	< 10	< 10	< 40	< 10	< 10	< 100	< 100	< 100	< 50
Benzene	71-43-2	< 0.50	< 0.50	< 0.50	< 0.50	< 2.0	< 0.50	< 0.50	< 5.0	< 5.0	< 5.0	< 2.5
Bromodichloromethane	75-27-4	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Bromoform	75-25-2	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Bromomethane	74-83-9	< 2.0	< 2.0	< 2.0	< 2.0	< 8.0	< 2.0	< 2.0	< 20	< 20	< 20	< 10
Carbon Disulfide	75-15-0	< 2.0	< 2.0	< 2.0	< 2.0	< 8.0	< 2.0	< 2.0	< 20	< 20	< 20	< 10
Carbon Tetrachloride	56-23-5	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	**3.3 J**
CFC-12	75-71-8	< 2.0	< 2.0	< 2.0	< 2.0	< 8.0	< 2.0	< 2.0	< 20	< 20	< 20	< 10
Chlorobenzene	108-90-7	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Chlorodibromomethane	124-48-1	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Chlorodifluoromethane	75-45-6	**1.3 J**	**1.9 J**	**1.8 J**	**1.3 J**	< 20	< 5.0	1.6 J	< 50	< 50	< 50	< 25
Chloroethane	75-00-3	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Chloroform	67-66-3	**4.7**	**4.7**	**4.2**	**4.8**	**2.9 J**	**2.1**	**3.5**	**17.1**	**20.9**	**22.5**	**18.4**
Chloromethane	74-87-3	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
cis-1,2-Dichloroethene	156-59-2	**133**	**128**	**144**	**143**	**433**	**539**	**553**	**893**	**1,070**	**1,220**	**1,140**
cis-1,3-Dichloropropene	10061-01-5	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Dichloromethane	75-09-2	< 2.0	< 2.0	< 2.0	< 2.0	< 8.0	< 2.0	< 2.0	< 20	< 20	< 20	< 10
Ethylbenzene	100-41-4	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
m&p-Xylenes	ARC-mpXyl	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Methyl N-Butyl Ketone (2-Hexanone)	591-78-6	< 5.0	< 5.0	< 5.0	< 5.0	< 20	< 5.0	< 5.0	< 50	< 50	< 50	< 25
o-Xylene	95-47-6	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Styrene (Monomer)	100-42-5	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Tetrachloroethene	127-18-4	**1.2**	**1.5**	**1.7**	**1.7**	**4.3**	**6.6**	**7.3**	**7.3 J**	**7.5 J**	**9.2 J**	**8.1**
Toluene	108-88-3	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
trans-1,2-Dichloroethene	156-60-5	**1.1**	**0.93 J**	**0.96 J**	**0.98 J**	**30.8**	**2.4**	**21.2**	< 10	**10.9**	**22.4**	**5.9**
trans-1,3-Dichloropropene	10061-02-6	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Trichloroethene	79-01-6	**179**	**175**	**150**	**188**	**491**	**583**	**733**	**4,280**	**4,360**	**4,230**	**4,720**
Vinyl chloride	75-01-4	< 1.0	< 1.0	< 1.0	< 1.0	< 4.0	< 1.0	< 1.0	< 10	< 10	< 10	< 5.0
Total VOCs		**323**	**315**	**307**	**344**	**967**	**1,145**	**1335**	**5,270**	**5,565**	**5,599**	**5,992**
1,4-Dioxane	123-91-1	**2.8**	**3.1**	**3.5**	--	**8.1**	**8.5**	**13**	**76**	**58**	**79 B**	**87**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells
Operable Unit 3
Northrop Grumman
Bethpage, New York

Constituents units in (ug/L)	Location ID: Sample ID: Date:	MW-116-5 12/13/2023 MW-116-5	MW-116-5 12/13/2023 REP121323SH1	RW-21_MW-13 4/26/2023 RW-21_MW-13	RW-21_MW-13 5/25/2023 RW-21_MW-13	RW-21_MW-13 5/25/2023 REP052523SV1	RW-21_MW-13 6/27/2023 RW-21_MW-13	RW-21_MW-13 7/18/2023 RW-21_MW-13	RW-21_MW-13 8/31/2023 RW-21_MW-13	RW-21_MW-13 9/26/2023 RW-21_MW-13	RW-21_MW-13 10/18/2023 RW-21_MW-13	RW-21_MW-13 11/14/2023 RW-21_MW-13
VOCs	**Cas RN**											
1,1,1-Trichloroethane	71-55-6	3.8 J	3.8 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.8 B	< 1.0
1,1,2,2-Tetrachloroethane	79-34-5	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1	< 25	< 25	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**0.76 J**	< 5.0
1,1,2-Trichloroethane	79-00-5	**4.8 J**	**5.2**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	75-34-3	**30.8**	**29.9**	**1.3**	**1.0**	**1.0**	**0.74 J**	**1.0**	**1.2**	**1.0**	**1.2**	< 1.0
1,1-Dichloroethene	75-35-4	**29.5**	**28.4**	**1.8**	**1.4**	**1.2**	**1.2**	**1.2**	**1.7**	**1.2**	**0.88 J**	< 1.0
1,2-Dichloroethane	107-06-2	**28.1**	**27.7**	**1.8**	**1.4**	**1.4**	**1.4**	**1.6**	**1.6**	**1.7**	< 2.4 B	< 1.0
1,2-Dichloropropane	78-87-5	**6.4**	**6.1**	< 1.0	**0.53 J**	< 1.0	< 1.0	< 1.0	**0.52 J**	< 1.0	< 1.0	< 1.0
1,3-Butadiene	106-99-0	< 25	< 25	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0
1-Chloro-1,1-difluoroethane	75-68-3	< 25	< 25	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Butanone (MEK)	78-93-3	< 50	< 50	< 10	< 10 J	< 10 J	< 10	< 10	< 10	< 10	< 10	< 10
4-Methyl-2-Pentanone	108-10-1	< 25	< 25	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	67-64-1	< 50	< 50	< 10	< 10 J	< 10 J	< 10	< 10 J	< 10 J	< 10	< 10	< 10 J
Benzene	71-43-2	< 2.5	< 2.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	75-27-4	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	75-25-2	< 5.0	< 5.0	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0
Bromomethane	74-83-9	< 10	< 10	< 2.0 J	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0
Carbon Disulfide	75-15-0	< 10	< 10	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	56-23-5	**3.7 J**	**3.5 J**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J	< 1.0	< 1.0
CFC-12	75-71-8	< 10	< 10	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0 J	< 2.0	< 2.0
Chlorobenzene	108-90-7	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	124-48-1	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodifluoromethane	75-45-6	< 25	< 25	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
Chloroethane	75-00-3	< 5.0	< 5.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	67-66-3	**20.8**	**20.2**	**2.1**	**1.2**	**1.1**	**0.89 J**	**1.2**	**1.6**	< 1.0	**1.1**	< 1.0
Chloromethane	74-87-3	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 J
cis-1,2-Dichloroethene	156-59-2	**1240**	**1320**	**43.4**	**35.9**	**34.6**	**28.2**	**30.0**	**42.4**	**36.2**	**29.7**	**9.6**
cis-1,3-Dichloropropene	10061-01-5	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	75-09-2	< 10	< 10	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 9.6 B	< 2.0
Ethylbenzene	100-41-4	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes	ARC-mpXyl	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)	591-78-6	< 25	< 25	< 5.0	< 5.0 J	< 5.0 J	< 5.0	< 5.0	< 5.0 J	< 5.0	< 5.0	< 5.0
o-Xylene	95-47-6	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)	100-42-5	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	127-18-4	**6.6**	**7.8**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 3.4 B	< 1.0
Toluene	108-88-3	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**0.81 J**	< 1.0
trans-1,2-Dichloroethene	156-60-5	**14.0**	**12.5**	**0.59 J**	< 1.0	< 1.0	< 1.0	< 1.0	**0.84 J**	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	10061-02-6	< 5.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	79-01-6	**3230**	**3490**	**491 D**	**556 D**	**548 D**	**484 D**	**502 D**	**559 D**	**470 D**	**405 D**	**185 D**
Vinyl chloride	75-01-4	< 5.0	< 5.0	< 1.0	< 1.0 J	< 1.0 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs		**4619**	**4955**	**542**	**597**	**587**	**516**	**537**	**609**	**510**	**439**	**195**
1,4-Dioxane	123-91-1	**54**	**78**	**6.6**	**4.8**	**6.1**	**7.1**	**12**	**10**	**12**	**7.8**	**2.2**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells
Operable Unit 3
Northrop Grumman
Bethpage, New York

Constituents units in (ug/L)	Location ID: Sample ID: Date:	RW-21_MW-13 12/5/2023 RW-21_MW-13	RW-21_MW-15 4/26/2023 RW-21_MW-15	RW-21_MW-15 5/25/2023 RW-21_MW-15	RW-21_MW-15 6/27/2023 RW-21_MW-15	RW-21_MW-15 7/19/2023 RW-21_MW-15	RW-21_MW-15 8/28/2023 RW-21_MW-15	RW-21_MW-15 9/26/2023 RW-21_MW-15	RW-21_MW-15 10/18/2023 RW-21_MW-15	RW-21_MW-15 11/14/2023 RW-21_MW-15	RW-21_MW-15 12/8/2023 RW-21_MW-15	RW-21_MW-16 4/26/2023 RW-21_MW-16
VOCs	**Cas RN**											
1,1,1-Trichloroethane	71-55-6	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0 B	< 5.0	< 10	< 5.0
1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1	< 5.0 J	< 25	< 50	< 25	< 25	< 50	< 50	< 25	< 25	< 50	< 25
1,1,2-Trichloroethane	79-00-5	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
1,1-Dichloroethane	75-34-3	0.91 J	**4.2 J**	< 10	**3.5 J**	**4.5 J**	< 10	< 10	**3.6 J**	**3.4 J**	**< 10**	**5.4**
1,1-Dichloroethene	75-35-4	1.4 J	**4.9 J**	< 10	< 5.0	**4.1 J**	< 10	< 10	**4.0 J**	**3.7 J**	**< 10**	**6.5**
1,2-Dichloroethane	107-06-2	1.3	**6.7**	**6.0 J**	**6.6**	**7.8**	**7.1 J**	< 10	< 7.1 B	< 7.3 B	6.2 J	**13.0**
1,2-Dichloropropane	78-87-5	0.54 J	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	**2.5 J**	< 5.0	< 10	**3.6 J**
1,3-Butadiene	106-99-0	< 5.0	< 25	< 50	< 25	< 25	< 50	< 50 J	< 25	< 25	< 50 J	< 25
1-Chloro-1,1-difluoroethane	75-68-3	< 5.0	< 25	< 50	< 25	< 25	< 50	< 50	< 25	< 25	< 50	< 25
2-Butanone (MEK)	78-93-3	< 10 J	< 50	< 100 J	< 50	< 50	< 100	< 100	< 50	< 50	< 100	< 50
4-Methyl-2-Pentanone	108-10-1	< 5.0	< 25	< 50	< 25	< 25	< 50	< 50	< 25	< 25	< 50	< 25
Acetone	67-64-1	< 10 J	< 50	< 100 J	< 50	< 50 J	< 100 J	< 100	< 50	< 50 J	< 100	< 50
Benzene	71-43-2	< 0.50	< 2.5	< 5.0	< 2.5	< 2.5	< 5.0	< 5.0	< 2.5	< 2.5	< 5.0	< 2.5
Bromodichloromethane	75-27-4	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Bromoform	75-25-2	< 1.0	< 5.0 J	< 10	< 5.0	< 5.0	< 10	< 10 J	< 5.0	< 5.0	< 10	< 5.0 J
Bromomethane	74-83-9	< 2.0 J	< 10 J	< 20	< 10 J	< 10	< 20	< 20	< 10 J	< 10	< 20	< 10 J
Carbon Disulfide	75-15-0	< 2.0	< 10	< 20	< 10 J	< 10	< 20	< 20	< 10	< 10	< 20	< 10
Carbon Tetrachloride	56-23-5	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10 J	< 5.0	< 5.0	< 10	< 5.0
CFC-12	75-71-8	< 2.0	< 10	< 20	< 10	< 10	< 20	< 20 J	< 10	< 10	< 20	< 10
Chlorobenzene	108-90-7	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Chlorodibromomethane	124-48-1	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Chlorodifluoromethane	75-45-6	< 5.0	< 25	< 50	< 25	< 25	< 50 J	< 50	< 25	< 25	< 50	< 25
Chloroethane	75-00-3	< 1.0	< 5.0	< 10 J	< 5.0	< 5.0	< 10	< 10	< 5.0 J	< 5.0	< 10	< 5.0
Chloroform	67-66-3	1.4	**6.0**	**5.4 J**	**4.3 J**	**6.1**	**7.7 J**	< 10	**6.6**	**6.2**	**6.3 J**	**10.6**
Chloromethane	74-87-3	< 1.0 J	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0 J	< 10	< 5.0
cis-1,2-Dichloroethene	156-59-2	**35.5**	**146**	**138**	**123**	**148**	**175**	**130**	**146**	**145**	**160**	**254**
cis-1,3-Dichloropropene	10061-01-5	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Dichloromethane	75-09-2	< 2.0	< 10	< 20	< 10	< 10	< 20	< 20	< 10 B	< 10	< 20	< 10
Ethylbenzene	100-41-4	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
m&p-Xylenes	ARC-mpXyl	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Methyl N-Butyl Ketone (2-Hexanone)	591-78-6	< 5.0	< 25	< 50 J	< 25	< 25	< 50 J	< 50	< 25	< 25	< 50	< 25
o-Xylene	95-47-6	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Styrene (Monomer)	100-42-5	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Tetrachloroethene	127-18-4	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	**4.6 J**	< 5.0	< 10	< 5.0
Toluene	108-88-3	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
trans-1,2-Dichloroethene	156-60-5	< 1.0	**3.2 J**	< 10	**7.6**	**9.8**	**7.6 J**	< 10	**6.5**	**4.0 J**	**6.5 J**	**3.4 J**
trans-1,3-Dichloropropene	10061-02-6	< 1.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Trichloroethene	79-01-6	**433 D**	**1,860 D**	**1,830 D**	**1,930 D**	**2,510 D**	**2,510 D**	**2,000**	**2,270 D**	**2,180 D**	**1670**	**1,070 D**
Vinyl chloride	75-01-4	< 1.0	< 5.0	< 10 J	< 5.0	< 5.0	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0
Total VOCs		**474**	**2,031**	**1,979**	**2,075**	**2,690**	**2,707**	**2,130**	**2,444**	**2,342**	**1849**	**1,367**
1,4-Dioxane	123-91-1	**7.9 J**	**8.6**	**20**	**22 J**	**22 J**	**30**	**34**	**39**	**33**	**28 J**	**27**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells
Operable Unit 3
Northrop Grumman
Bethpage, New York

Constituents units in (ug/L)	Location ID: Sample ID: Date:	RW-21_MW-16 5/25/2023 RW-21_MW-16	RW-21_MW-16 6/27/2023 RW-21_MW-16	RW-21_MW-16 7/19/2023 RW-21_MW-16	RW-21_MW-16 9/25/2023 RW-21_MW-16	RW-21_MW-16 10/17/2023 RW-21_MW-16	RW-21_MW-16 11/15/2023 RW-21_MW-16	RW-21_MW-16 12/8/2023 RW-21_MW-16
VOCs	**Cas RN**							
1,1,1-Trichloroethane	71-55-6	< 5.0	< 10	< 5.0	< 2.0	**2.4**	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	79-34-5	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1	< 25	< 50	< 25	< 10	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	79-00-5	< 5.0	< 10	< 5.0	< 2.0	**0.61 J**	< 1.0	< 1.0
1,1-Dichloroethane	75-34-3	**4.4 J**	< 10	**4.0 J**	**1.9 J**	**1.5**	**0.78 J**	**1.1**
1,1-Dichloroethene	75-35-4	**7.0**	**6.1 J**	**4.3 J**	**2.7**	**1.7**	**1.2**	**1.2**
1,2-Dichloroethane	107-06-2	**10.9**	**11.9**	**13.4**	**4.6**	**3.4**	**1.6**	**2.0**
1,2-Dichloropropane	78-87-5	**3.6 J**	< 10	**2.9 J**	< 2.0	**1.1**	< 1.0	< 1.0
1,3-Butadiene	106-99-0	< 25	< 50 J	< 25	< 10 J	< 5.0	< 5.0	< 5.0 J
1-Chloro-1,1-difluoroethane	75-68-3	< 25	< 50	< 25	< 10	< 5.0	< 5.0	< 5.0
2-Butanone (MEK)	78-93-3	< 50 J	< 100	< 50	< 20	< 10	< 10	< 10
4-Methyl-2-Pentanone	108-10-1	< 25	< 50	< 25	< 10	< 5.0	< 5.0	< 5.0
Acetone	67-64-1	< 50 J	< 100 J	< 50 J	< 20	< 10	< 10	< 10
Benzene	71-43-2	< 2.5	< 5.0	< 2.5	< 1.0	< 0.50	< 0.50	< 0.50
Bromodichloromethane	75-27-4	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Bromoform	75-25-2	< 5.0	< 10	< 5.0	< 2.0 J	< 1.0	< 1.0	< 1.0
Bromomethane	74-83-9	< 10	< 20 J	< 10	< 4.0	< 2.0 J	< 2.0 J	< 2.0
Carbon Disulfide	75-15-0	< 10	< 20	< 10	< 4.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	56-23-5	< 5.0	< 10	< 5.0	< 2.0 J	< 1.0	< 1.0	< 1.0
CFC-12	75-71-8	< 10	< 20	< 10	< 4.0 J	< 2.0	< 2.0	< 2.0
Chlorobenzene	108-90-7	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	124-48-1	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Chlorodifluoromethane	75-45-6	< 25	< 50	< 25	< 10	< 5.0	< 5.0	< 5.0
Chloroethane	75-00-3	< 5.0 J	< 10	< 5.0	< 2.0	< 1.0 J	< 1.0	< 1.0
Chloroform	67-66-3	**10.2**	**10.4**	**13.7**	**5.7**	**3.5**	**2.2**	**2.7**
Chloromethane	74-87-3	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0 J	< 1.0
cis-1,2-Dichloroethene	156-59-2	**255**	**224**	**196**	**106**	**56.7**	**28.6**	**35.8**
cis-1,3-Dichloropropene	10061-01-5	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Dichloromethane	75-09-2	< 10	< 20	< 10	< 4.0	**5.1**	< 2.0	< 2.0
Ethylbenzene	100-41-4	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes	ARC-mpXyl	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)	591-78-6	< 25 J	< 50	< 25	< 10	< 5.0	< 5.0	< 5.0
o-Xylene	95-47-6	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)	100-42-5	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	127-18-4	< 5.0	< 10	< 5.0	< 2.0	**3.6**	< 1.0	< 1.0
Toluene	108-88-3	< 5.0	< 10	< 5.0	< 2.0	**0.73 J**	< 1.0	< 1.0
trans-1,2-Dichloroethene	156-60-5	< 5.0	< 10	**14.3**	< 2.0	**0.72 J**	< 1.0	< 1.0
trans-1,3-Dichloropropene	10061-02-6	< 5.0	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Trichloroethene	79-01-6	**1,260 D**	**1,210**	**1,270 D**	**673 D**	**492 D**	**316 D**	**401 D**
Vinyl chloride	75-01-4	< 5.0 J	< 10	< 5.0	< 2.0	< 1.0	< 1.0	< 1.0
Total VOCs		**1,551**	**1,462**	**1,519**	**794**	**573**	**350**	**444**
1,4-Dioxane	123-91-1	**19**	**16**	**33 J**	**13**	**5.5**	**3.2**	**3.3 J**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells
Operable Unit 3
Northrop Grumman
Bethpage, New York

Notes and Abbreviations:

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

TVOC concentrations are rounded to the number of decimal places of the individual VOC with the least numerical precision (decimal place), including whole numbers with no decimal place.

Samples analyzed for TCL VOCs using USEPA Method 8260C.

Samples analyzed for 1,4-Dioxane using USEPA Method 8270D SIM.

Sample data for RW-21_MW-16 not available for August 2023 because the monitoring well was not sampled due to access issues at the time sampling was performed.

Bold value indicates a detection.

Cas RN	Chemical Abstract Services Registry Number
RI/FS	Remedial Investigation/Feasibility Study
USEPA	United States Environmental Protection Agency
TCL	Target compound list
VOC	Volatile Organic Compound
TVOC	Total Volatile Organic Compounds
<1.0	Compound not detected above its laboratory quantification limit
ug/L	Micrograms per liter
J	Value is estimated
REP	Blind replicate
--	Not Analyzed or data not yet available
D	Concentration is based on a diluted sample analysis
B	Indicates analyte found in associated method blank

Figure

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
C:\Users\iamicell\BIM 360\Arcadis\ANA - Northrop Grumman\Project Files\OU2 SITEWIDE GW\2020\30037969\01-DWG\NGC-OU3 WELLS.dwg LAYOUT: 1 SAVED: 1/10/2020 8:15 PM ACADVER: 23.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/13/2021 5:26 PM BY: IAMICELI, KIMBERLY
XREFS: IMAGES: PROJECTNAME: ----
x-1496x01
X-LI-NY_RD&ST
X-BDR-EP

EXPLANATION:

- CURRENT NORTHROP GRUMMAN PROPERTY
- CURRENT NAVAL OWNED PROPERTY
- FORMER NORTHROP GRUMMAN PROPERTY BOUNDARY
- FORMER NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- MONITORING WELL
- REMEDIAL 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

FIGURE 1