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Subject: 2022 Second Quarter Operation, Maintenance, and Monitoring Report, Operable Unit 2, Northrop Grumman and Naval Weapons Industrial Reserve Plant (NWIRP) Sites, Bethpage, New York.  
(NYSDEC Site #'s 1-30-003A and B)

Dear Jason:

On behalf of Northrop Grumman, Arcadis is providing the NYSDEC with the Second Quarter 2022 Operation, Maintenance, and Monitoring Report (Report). This Report was prepared to document the operation, maintenance, and monitoring (OM&M) activities conducted for the Operable Unit 2 (OU2) groundwater remedy and the results of ongoing volatile organic compound (VOC) and inorganic monitoring in groundwater to meet the remedial objectives set forth in the March 2001 OU2 Record of Decision (ROD) and associated December 2019 Amended Record of Decision (AROD).

**Table 1** summarizes OU2 remedial system performance operational data, mass removed, and water balance. **Tables 2 and 3A/3B** provide the analytical results for remedial system water and vapor samples, respectively, for this period. **Tables 4A and 4B** provide the air modeling inputs and outputs and resulting analyses based on quarterly vapor samples collected from the Tower 96 and Tower 102 systems, respectively, for this period. **Tables 5A and 5B** provide a summary of percent mass emittance of TCE from vapor sampling completed during the Third Quarter 2021 through the Second Quarter 2022. **Table 6** provides validated analytical results associated with groundwater monitoring efforts completed during this period. **Figures 1 through 3** show the Locations of Wells and On-site Groundwater Remedy, ONCT Groundwater Extraction and Treatment System Site Plan, and the ONCT Groundwater Extraction and Treatment System Schematic, respectively.

As indicated on **Table 5A**, the 12-month rolling average of the percentage of allowable TCE emissions at the Tower 96 system was at greater than 100%; however, the Rule 212 compliance limit for TCE was not exceeded.

Jason Pelton  
NYSDEC  
August 31, 2022

Please contact us if you have any questions or comments.

Sincerely,  
Arcadis of New York, Inc.



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Frank Koch – South Farmingdale Water District  
John Reinhardt – Town of Hempstead Water District  
Michael Boufis – Bethpage Water District  
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File

Enclosures

# Tables

Table 1  
Operational Summary for the Treatment System  
Second Quarter 2022<sup>(1)</sup> Reporting Period  
Operable Unit 2  
Northrop Grumman  
Bethpage, New York



	Quarterly Flow Rates (gpm)		Quarterly Flow Volumes (MG)			Quarterly VOC Concentrations (µg/L)		VOC Mass Removed (lbs)		Second Quarter Remedial Well Uptime (%)
	Current Model Design <sup>(2)</sup>	Current Operational Flow <sup>(3,4)</sup>	Design <sup>(2)</sup>	Actual <sup>(3,4)</sup>	% of Design	TCE <sup>(5)</sup>	TVOC <sup>(5,6)</sup>	Quarterly	Cumulative	
<b>Influent Groundwater <sup>(7)</sup></b>										
Well 1	800	854	105	108	103%	538	567	512	55,420	97%
Well 3R	700	756	92	96	104%	159	214	172	94,135	97%
Well 17	1,000	1,019	131	128	98%	131	152	162	55,861	96%
Well 18	800	1,020	105	129	123%	27.3	49.3	53	7,395	96%
Well 19	500	517	66	64	97%	69.9	86.9	46	9,613	95%
<b>Total <sup>(8)</sup></b>	<b>3,800</b>	<b>4,166</b>	<b>499</b>	<b>525</b>	<b>105%</b>	<b>--</b>	<b>--</b>	<b>945</b>	<b>222,424</b>	<b>--</b>
<b>Effluent Groundwater <sup>(9)</sup></b>										
Calpine	100 - 400	66	--	9	--	--	--	--	--	--
OXY Biosparge <sup>(10)</sup>	2 - 42	0	--	0	--	--	--	--	--	--
West Recharge Basins	1,112 - 1,455	1,382	--	181	--	--	ND	--	--	--
South Recharge Basins	2,231	2,569	292	337	115%	--	ND	--	--	--
<b>Total</b>	<b>--</b>	<b>4,017</b>	<b>--</b>	<b>527</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Additional Flow to South Recharge Basins</b>										
Storm Water Runoff Contributing to South Recharge Basins Flow Volume <sup>(11)</sup>	--	--	--	17	--	--	--	--	--	--
<b>Total Flow Volume to South Recharge Basins <sup>(10,11,12)</sup></b>	<b>--</b>	<b>--</b>	<b>292</b>	<b>354</b>	<b>121%</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Treatment Efficiencies <sup>(13)</sup></b>										
Tower 96 System:	>99.9%									
Tower 102 System:	>99.9%									

See Notes and Abbreviations on last page.

**Notes and Abbreviations:**

- (1) Quarterly reporting period: April 1, 2022 through June 30, 2022.
- (2) "Current Model Design" flow rates were determined for the five remedial wells and for the South Recharge Basin based on computer modeling (ARCADIS G&M, Inc. 2002, updated in 2021). Flow rates for Calpine Power Plant (Calpine), Occidental Chemical (OXY) Biosparge, and West Recharge Basin flow rates are typical flow rates and are provided for reader information. "Design" flow volumes represent the volume of water that is expected to be pumped/discharged during the reporting period and is calculated by multiplying the design rate by the reporting period duration.
- (3) Actual flow rates for the remedial wells represent the average actual pumping rates when the pumps are operational and do not take into account the time that a well is not operational. Actual flow volumes are collated from the monthly SPDES reports, which are calculated using the SCADA instantaneous flow rates transmitted from local flow meters.
- (4) "Actual" flow rates for the system discharges represent the average flow rate during the reporting period and are determined by dividing the total flow recorded during the reporting period by the reporting period duration.
- (5) The TCE and TVOC concentrations are from the quarterly sampling events performed during this reporting period on May 17, 2022.
- (6) The TVOC concentrations for the West Recharge Basin (Outfall 006 of the Tower 96 System) and the South Recharge Basin (Outfall 005 of the Tower 102 System) are their respective average monthly Outfall SPDES concentrations for the current quarter.
- (7) Tower 96 (Wells 1 and 3R) was shut down this reporting period to accommodate the replacement of vapor-phase granular activated carbon (VPGAC) in both exterior VPGAC emissions control units, and other smaller-scale repairs. As such, the system was shut down approximately 2 days in April and approximately 1 day in May.  
Tower 102 System was shut down this reporting period for smaller-scale repairs. As such, the system was shut down approximately 2 days in April and approximately 1 day in May.
- (8) Total pumpage/recharge rates are accurate to ±15% based on available information and expected or typical precision/accuracy factors for the gauges and meters.
- (9) There are four possible discharges for the effluent groundwater: South Recharge Basins, West Recharge Basins, Calpine, and the OXY Biosparge system. Treated water is continuously discharged to the south and west recharge basins during routine operation, and is available "on-demand" to both Calpine for use as make-up water, and the OXY Biosparge remediation system. For this quarter, the quarterly flow rates to the south and west recharge basins (SRB and WRB, respectively) were calculated using the remedial well flow rates and available additional information and assumptions provided by Northrop Grumman regarding flow distribution, as follows: the Tower 96 system (Remedial Wells 1 and 3R) discharges effluent water to the WRB, less Calpine usage and less 119 gpm of Tower 102 steam condenser usage (15.8 MG); the Tower 102 System (Remedial Wells 17 through 19), including the Tower 102 steam condenser usage (15.8 MG), discharges effluent water to the SRB.
- (10) Oxy has not reported any water usage for the OXY Biosparge system since May 2016.
- (11) Storm water runoff volume is calculated by multiplying the adjusted tributary area and NOAA precipitation data for the reporting periods. The tributary area is adjusted by the runoff coefficient to exclude the infiltration volume from the total rainfall volume. The tributary area, runoff coefficient, and adjusted tributary area are from Dvirka and Bartilucci Consulting Engineers' Storm Water Permit Evaluation Report (January, 28, 2010). The NOAA precipitation data are calculated as a sum of NOAA daily precipitation data for the reporting period. NOAA precipitation data are retrieved from Station GHCND:USW00054787 - FARMINGDALE REPUBLIC AIRPORT, NY US for April, May, and June 2022.
- (12) Total flow volume to South Recharge Basins is estimated as a sum of flow volumes contributed by the effluent groundwater to South Recharge Basins and from storm water runoff to South Recharge Basins. Second Quarter 2022 calculated South Recharge Basin flow volume is within historical operating range.
- (13) Treatment system efficiencies are calculated by dividing the difference between the remedial well flow weighted influent and effluent TVOC concentrations by the remedial well flow weighted influent concentration.

- Not Applicable
- µg/L micrograms per liter
- gpm gallons per minute
- lbs pounds
- MG million gallons
- NOAA National Oceanic and Atmospheric Administration
- SCADA Supervisory Controls and Data Acquisition
- SPDES State Pollution Discharge Elimination System
- TCE trichloroethene
- TVOC total volatile organic compounds
- VOC volatile organic compounds

**Table 2**  
**Concentrations of Constituents in Remedial Wells and**  
**Treatment System Effluents**  
**Second Quarter 2022<sup>(1)</sup> Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituents <sup>(2)</sup> (Units in µg/L)	CAS#	Location ID: Sample ID: Sample Date:	WELL 1 WELL 1 5/17/2022	WELL 3R WELL 3R 5/17/2022	WELL 3R REP-051722-KC-1 5/17/2022	96 EFFLUENT 96 EFFLUENT 5/17/2022
<b>Volatile Organic Compounds (VOCs)<sup>(3)</sup></b>						
1,1,1-Trichloroethane	00071-55-6		< 0.50	<b>0.54</b>	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	00079-34-5		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	00079-00-5		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	00075-34-3		<b>0.87 J</b>	<b>1.5</b>	<b>1.3</b>	< 1.0
1,1-Dichloroethene	00075-35-4		<b>1.8</b>	<b>4.2</b>	<b>4.1</b>	< 0.50
1,2-Dichloroethane	00107-06-2		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	00078-87-5		<b>3.3</b>	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)	00078-93-3		< 10	< 10	< 10	< 10
2-Hexanone (MBK)	00591-78-6		< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone (MIK)	00108-10-1		< 5.0	< 5.0	< 5.0	< 5.0
Acetone	00067-64-1		< 10	< 10	< 10	< 10
Benzene	00071-43-2		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	00075-27-4		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	00075-25-2		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	00074-83-9		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	00075-15-0		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	00056-23-5		< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	00108-90-7		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	00075-00-3		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	00067-66-3		< 0.50	< 0.50	< 0.50	< 0.50
Chloromethane	00074-87-3		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	00156-59-2		<b>6.0</b>	<b>3.2</b>	<b>3.2</b>	< 0.50
cis-1,3-Dichloropropene	10061-01-5		< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	00124-48-1		< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	00100-41-4		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	00075-09-2		< 0.50	< 0.50	< 0.50	< 0.50
Styrene	00100-42-5		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	00127-18-4		<b>14.0</b>	<b>41.0</b>	<b>38.4</b>	< 0.50
Toluene	00108-88-3		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	00156-60-5		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene	10061-02-6		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene	00079-01-6		<b>538</b>	<b>159</b>	<b>151</b>	< 0.50
Trichlorotrifluoroethane (Freon 113)	00076-13-1		<b>3.2</b>	<b>2.0</b>	<b>1.7</b>	< 0.50
Vinyl Chloride	00075-01-4		< 0.50	<b>2.5</b>	<b>2.4</b>	< 0.50
Xylene-o	00095-47-6		< 1.0	< 1.0	< 1.0	< 1.0
Xylene-m,p	179601-23-1		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(4)</sup></b>			<b>567</b>	<b>214</b>	<b>202</b>	<b>ND</b>
<b>1,4-Dioxane<sup>(3)</sup></b>			<b>6.6</b>	<b>8.7</b>	<b>9.2</b>	<b>6.1</b>

Notes and abbreviations on last page.

**Table 2**  
**Concentrations of Constituents in Remedial Wells and**  
**Treatment System Effluents**  
**Second Quarter 2022<sup>(1)</sup> Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituents <sup>(2)</sup> (Units in µg/L)	CAS#	Location ID:	WELL 17	WELL 18	WELL 19	102 EFFLUENT
		Sample ID: Sample Date:	WELL 17 5/17/2022	WELL 18 5/17/2022	WELL 19 5/17/2022	102 EFFLUENT 5/17/2022
<b>Volatile Organic Compounds (VOCs)<sup>(3)</sup></b>						
1,1,1-Trichloroethane	00071-55-6		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane	00079-34-5		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	00079-00-5		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	00075-34-3		<b>0.62 J</b>	<b>1.4</b>	< 1.0	< 1.0
1,1-Dichloroethene	00075-35-4		<b>1.0</b>	<b>2.2</b>	<b>1.0</b>	< 0.50
1,2-Dichloroethane	00107-06-2		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	00078-87-5		<b>0.84 J</b>	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)	00078-93-3		< 10	< 10	< 10	< 10
2-Hexanone (MBK)	00591-78-6		< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone (MIK)	00108-10-1		< 5.0	< 5.0	< 5.0	< 5.0
Acetone	00067-64-1		< 10	< 10	< 10	< 10
Benzene	00071-43-2		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	00075-27-4		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform	00075-25-2		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	00074-83-9		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide	00075-15-0		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride	00056-23-5		< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	00108-90-7		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	00075-00-3		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	00067-66-3		< 0.50	< 0.50	< 0.50	< 0.50
Chloromethane	00074-87-3		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	00156-59-2		<b>2.4</b>	<b>2.5</b>	<b>9.8</b>	< 0.50
cis-1,3-Dichloropropene	10061-01-5		< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	00124-48-1		< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	00100-41-4		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	00075-09-2		< 0.50	< 0.50	< 0.50	< 0.50
Styrene	00100-42-5		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	00127-18-4		<b>14.0</b>	<b>15.0</b>	<b>5.4</b>	< 0.50
Toluene	00108-88-3		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	00156-60-5		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene	10061-02-6		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene	00079-01-6		<b>131</b>	<b>27.3</b>	<b>69.9</b>	< 0.50
Trichlorotrifluoroethane (Freon 113)	00076-13-1		<b>1.7</b>	<b>0.88</b>	<b>0.82</b>	< 0.50
Vinyl Chloride	00075-01-4		< 0.50	< 0.50	< 0.50	< 0.50
Xylene-o	00095-47-6		< 1.0	< 1.0	< 1.0	< 1.0
Xylene-m,p	179601-23-1		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(4)</sup></b>			<b>152</b>	<b>49.3</b>	<b>86.9</b>	<b>ND</b>
<b>1,4-Dioxane<sup>(3)</sup></b>			<b>5.5</b>	<b>4.2</b>	<b>3.5</b>	<b>4.9</b>

Notes and abbreviations on last page.

Table 2  
Concentrations of Constituents in Remedial Wells and  
Treatment System Effluents  
Second Quarter 2022<sup>(1)</sup> Reporting Period  
Operable Unit 2  
Northrop Grumman  
Bethpage, New York



**Notes and Abbreviations:**

- (1) Quarterly reporting period: April 1, 2022 through June 30, 2022.
- (2) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
- (3) VOC samples analyzed using USEPA Method 8260C. 1,4-Dioxane samples analyzed using USEPA Method 8270D-SIM.
- (4) 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.

<b>5.5</b>	Bold value indicates a detection
< 0.5	Compound is not detected above its laboratory quantification limit
µg/L	micrograms per liter
J	Compound detected below its reporting limit; value is estimated
ND	Not detected
OU2	Operable Unit 2
REP	Blind Replicate Sample
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound



**Table 3A**  
**Vapor Sample Analytical Results**  
**Tower 96 Treatment System**  
**Second Quarter 2022<sup>(1)</sup> Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituents (units in µg/m <sup>3</sup> )	Location ID: Sample ID: Sample Date:	96 INFLUENT T96 INFLUENT 4/26/2022	96 INFLUENT T96 INFLUENT 5/17/2022	96 INFLUENT T96 INFLUENT 6/17/2022
<b>Volatile Organic Compounds (VOCs)<sup>(2)</sup></b>	<b>CAS #</b>			
1,1,1-Trichloroethane	00071-55-6	<b>14</b>	< 1.1	< 22
1,1,2,2-Tetrachloroethane	00079-34-5	< 10	< 1.4	< 27
1,1,2-Trichloroethane	00079-00-5	< 8.2	< 1.1	< 22
1,1-Dichloroethane	00075-34-3	<b>37</b>	<b>1.1 J</b>	<b>34</b>
1,1-Dichloroethene	00075-35-4	<b>94</b>	<b>2.6</b>	<b>105</b>
1,2-Dichloroethane	00107-06-2	< 6.1	< 1.6	< 32
1,2-Dichloropropane	00078-87-5	<b>66</b>	<b>1.9</b>	<b>47.1</b>
Benzene	00071-43-2	< 4.8	< 1.3	< 26
Bromodichloromethane	00075-27-4	< 10	< 1.3	< 27
Bromoform	00075-25-2	< 16	< 0.83	< 17
Bromomethane	00074-83-9	< 5.8	< 1.6	< 31
Carbon Disulfide	00075-15-0	< 47	< 1.2	< 25
Carbon Tetrachloride	00056-23-5	< 9.4	< 0.50	< 10
Chlorobenzene	00108-90-7	< 6.9	< 1.8	< 37
Chloroethane	00075-00-3	< 4.0	< 1.1	< 21
Chloroform	00067-66-3	<b>13</b>	< 2.0	< 39
Chloromethane	00074-87-3	< 6.2	<b>1.2</b>	< 17
cis-1,2-Dichloroethene	00156-59-2	<b>150</b>	<b>4.0</b>	<b>151</b>
cis-1,3-Dichloropropene	10061-01-5	< 6.8	< 1.8	< 36
Dibromochloromethane	00124-48-1	< 13	< 1.7	< 34
Ethylbenzene	00100-41-4	< 6.5	< 1.7	< 35
Dichloromethane	00075-09-2	< 52	< 1.4	< 28
Styrene	00100-42-5	< 6.4	< 1.7	< 34
Tetrachloroethene	00127-18-4	<b>890</b>	<b>25</b>	<b>437</b>
Toluene	00108-88-3	< 5.7	<b>1.2 J</b>	< 30
trans-1,2-Dichloroethene	00156-60-5	< 5.9	< 1.6	< 32
trans-1,3-Dichloropropene	10061-02-6	< 6.8	< 1.8	< 36
Trichloroethylene	00079-01-6	<b>16,000</b>	<b>434</b>	<b>13,400</b>
Trichlorotrifluoroethane (Freon 113)	00076-13-1	<b>77</b>	<b>2.4</b>	<b>89.7</b>
Vinyl Chloride	00075-01-4	<b>40</b>	<b>0.84</b>	<b>35.3</b>
Xylene-o	00095-47-6	< 6.5	< 1.7	< 35
Xylene-m,p	179601-23-1	< 13	< 1.7	< 35
<b>Total VOCs<sup>(3,4,5,6)</sup></b>		<b>17,381</b>	<b>474</b>	<b>14,299</b>

Notes and abbreviations on last page.

**Table 3A**  
**Vapor Sample Analytical Results**  
**Tower 96 Treatment System**  
**Second Quarter 2022<sup>(1)</sup> Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituents (units in µg/m <sup>3</sup> )	96 MID-EFFLUENT T96 MIDTRAIN 4/26/2022	96 MID-EFFLUENT T96 MIDTRAIN 5/17/2022	96 MID-EFFLUENT T96 MIDTRAIN 6/17/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(2)</sup></u></b>			
1,1,1-Trichloroethane	< 1.1	< 2.2	<b>3.6</b>
1,1,2,2-Tetrachloroethane	< 1.4	< 2.7	< 1.4
1,1,2-Trichloroethane	< 1.1	< 2.2	< 1.1
1,1-Dichloroethane	< 0.81	< 3.2	<b>37</b>
1,1-Dichloroethene	<b>1.7</b>	<b>7.9</b>	<b>128</b>
1,2-Dichloroethane	< 0.81	< 3.2	<b>0.97 J</b>
1,2-Dichloropropane	<b>7.0</b>	<b>1.8 J</b>	< 1.8
Benzene	< 0.64	< 2.6	< 1.3
Bromodichloromethane	< 1.3	< 2.7	< 1.3
Bromoform	< 2.1	< 1.7	< 0.83
Bromomethane	< 0.78	< 3.1	< 1.6
Carbon Disulfide	< 6.2	< 2.5	< 1.2
Carbon Tetrachloride	< 1.3	< 1.0	< 0.50
Chlorobenzene	< 0.92	< 3.7	< 1.8
Chloroethane	<b>3.1</b>	< 2.1	<b>2.9</b>
Chloroform	< 0.98	< 3.9	<b>13</b>
Chloromethane	< 0.83	<b>1.4 J</b>	<b>0.89</b>
cis-1,2-Dichloroethene	<b>9.0</b>	<b>4.4</b>	<b>134</b>
cis-1,3-Dichloropropene	< 0.91	< 3.6	< 1.8
Dibromochloromethane	< 1.7	< 3.4	< 1.7
Ethylbenzene	< 0.87	< 3.5	< 1.7
Dichloromethane	< 6.9	< 2.8	<b>1.7</b>
Styrene	< 0.85	< 3.4	< 1.7
Tetrachloroethene	<b>11</b>	<b>3.8</b>	<b>1.1</b>
Toluene	<b>1.7</b>	<b>1.7 J</b>	< 1.5
trans-1,2-Dichloroethene	< 0.79	< 3.2	<b>1.6</b>
trans-1,3-Dichloropropene	< 0.91	< 3.6	< 1.8
Trichloroethylene	<b>1,200</b>	<b>449</b>	<b>742</b>
Trichlorotrifluoroethane (Freon 113)	< 6.1	< 3.1	<b>87.4</b>
Vinyl Chloride	<b>32</b>	<b>5.1</b>	<b>28.4</b>
Xylene-o	< 0.87	< 3.5	< 1.7
Xylene-m,p	< 1.7	< 3.5	< 1.7
<b>Total VOCs<sup>(3,4,5,6)</sup></b>	<b>1,266</b>	<b>475</b>	<b>1,183</b>

Notes and abbreviations on last page.

**Table 3A**  
**Vapor Sample Analytical Results**  
**Tower 96 Treatment System**  
**Second Quarter 2022<sup>(1)</sup> Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituents (units in $\mu\text{g}/\text{m}^3$ )	96 EFFLUENT T96 EFFLUENT 4/26/2022	96 EFFLUENT T96 EFFLUENT 5/17/2022	96 EFFLUENT T96 EFFLUENT 6/17/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(2)</sup></u></b>			
1,1,1-Trichloroethane	< 1.1	< 0.55	< 0.44
1,1,2,2-Tetrachloroethane	< 1.4	< 0.69	< 0.55
1,1,2-Trichloroethane	< 1.1	< 0.55	< 0.44
1,1-Dichloroethane	< 0.81	< 0.81	<b>7.3</b>
1,1-Dichloroethene	< 0.79	<b>5.6</b>	<b>71</b>
1,2-Dichloroethane	< 0.81	< 0.81	< 0.65
1,2-Dichloropropane	< 0.92	< 0.92	< 0.74
Benzene	< 0.64	< 0.64	< 0.51
Bromodichloromethane	< 1.3	< 0.67	< 0.54
Bromoform	< 2.1	< 0.41	< 0.33
Bromomethane	< 0.78	< 0.78	< 0.62
Carbon Disulfide	< 6.2	< 0.62	< 0.50
Carbon Tetrachloride	< 1.3	< 0.25	< 0.20
Chlorobenzene	< 0.92	< 0.92	< 0.74
Chloroethane	<b>4.8</b>	<b>3.4</b>	<b>3.2</b>
Chloroform	< 0.98	< 0.98	<b>0.93</b>
Chloromethane	< 0.83	<b>1.1</b>	<b>0.91</b>
cis-1,2-Dichloroethene	< 0.79	<b>0.48</b>	<b>5.9</b>
cis-1,3-Dichloropropene	< 0.91	< 0.91	< 0.73
Dibromochloromethane	< 1.7	< 0.85	< 0.68
Ethylbenzene	< 0.87	< 0.87	< 0.69
Dichloromethane	< 6.9	<b>1.9</b>	<b>2.8</b>
Styrene	< 0.85	< 0.85	< 0.68
Tetrachloroethene	< 1.4	< 0.27	<b>1.4</b>
Toluene	< 0.75	<b>6.4</b>	<b>1.2</b>
trans-1,2-Dichloroethene	<b>1.6</b>	< 0.79	< 0.63
trans-1,3-Dichloropropene	< 0.91	< 0.91	< 0.73
Trichloroethylene	<b>7.4</b>	<b>4.5</b>	<b>24</b>
Trichlorotrifluoroethane (Freon 113)	< 6.1	< 0.77	<b>4.8</b>
Vinyl Chloride	<b>51</b>	<b>39.9</b>	<b>33.5</b>
Xylene-o	< 0.87	< 0.87	< 0.69
Xylene-m,p	< 1.7	< 0.87	< 0.69
<b>Total VOCs<sup>(3,4,5,6)</sup></b>	<b>65</b>	<b>63</b>	<b>157</b>

Notes and abbreviations on last page.

**Table 3A  
 Vapor Sample Analytical Results,  
 Tower 96 Treatment System,  
 Second Quarter 2022<sup>(1)</sup> Reporting Period  
 Operable Unit 2  
 Northrop Grumman  
 Bethpage, New York**



**Notes and Abbreviations:**

- (1) Quarterly reporting period: April 1, 2022 through June 30, 2022.
- (2) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (3) 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.
- (4) The system was reconfigured to bypass the regenerative vapor-phase GAC components and treat air stripper effluent directly through the exterior VPGAC emission control units on 3/15/22.
- (5) T96 vapor-phase influent concentrations for the May 17, 2022 sample were uncharacteristically low and well below the expected concentration range, with midfluent and effluent concentrations on the lower end of the expected concentration ranges. The analytical laboratory indicated no issues with the sample analyses.
- (6) During this quarterly reporting period, monthly air samples were collected for laboratory analysis of VOCs as part of an enhanced sampling program implemented to more closely monitor T96 following its reconfiguration to eliminate the regenerative VPGAC components of the system. As a conservative "worst case" scenario, the sample exhibiting the greatest TVOC concentrations in system effluent from the three monthly samples (6/17/22) will be compared to the Rule 212 compliance limits.

- 14** Bold value indicates a detection
- < 1.1 Compound is not detected above its laboratory quantification limit
- µg/m<sup>3</sup> micrograms per cubic meter
- J Compound detected below its reporting limit; value is estimated
- ELAP Environmental Laboratory Approval Program
- NYSDOH New York State Department of Health
- USEPA United States Environmental Protection Agency
- VOC Volatile Organic Compound

**Table 3B**  
**Vapor Sample Analytical Results**  
**Tower 102 Treatment System**  
**Second Quarter 2022<sup>(1)</sup> Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



<b>Constituents</b> (units in µg/m <sup>3</sup> )	<b>Location ID: Sample ID: Sample Date:</b>	<b>102 INFLENT T102 INFLENT 5/17/2022</b>	<b>102 EFFLENT T102 EFFLENT 5/17/2022</b>
<b><u>Volatile Organic Compounds (VOCs)</u></b> <sup>(2)</sup>	<b>CAS #</b>		
1,1,1-Trichloroethane	00071-55-6	< 11	< 0.55
1,1,2,2-Tetrachloroethane	00079-34-5	< 14	< 0.69
1,1,2-Trichloroethane	00079-00-5	< 11	< 0.55
1,1-Dichloroethane	00075-34-3	<b>32</b>	<b>15</b>
1,1-Dichloroethene	00075-35-4	<b>48.0</b>	<b>27</b>
1,2-Dichloroethane	00107-06-2	< 16	< 0.81
1,2-Dichloropropane	00078-87-5	<b>15 J</b>	< 0.92
Benzene	00071-43-2	< 13	<b>0.73</b>
Bromodichloromethane	00075-27-4	< 13	< 0.67
Bromoform	00075-25-2	< 8.3	< 0.41
Bromomethane	00074-83-9	< 16	< 0.78
Carbon Disulfide	00075-15-0	< 12	< 0.62
Carbon Tetrachloride	00056-23-5	< 5.0	< 0.25
Chlorobenzene	00108-90-7	< 18	< 0.92
Chloroethane	00075-00-3	< 11	< 0.53
Chloroform	00067-66-3	< 20	<b>1.7</b>
Chloromethane	00074-87-3	< 8.3	<b>1.2</b>
cis-1,2 Dichloroethene	00156-59-2	<b>137</b>	<b>13</b>
cis-1,3-Dichloropropene	10061-01-5	< 18	< 0.91
Dibromochloromethane	00124-48-1	< 17	< 0.85
Ethylbenzene	00100-41-4	< 17	<b>0.78 J</b>
Dichloromethane	00075-09-2	< 14	<b>2.5</b>
Styrene	00100-42-5	< 17	< 0.85
Tetrachloroethene	00127-18-4	<b>391</b>	<b>0.62</b>
Toluene	00108-88-3	< 15	<b>5.3</b>
trans-1,2-Dichloroethene	00156-60-5	< 16	< 0.79
trans-1,3-Dichloropropene	10061-02-6	< 18	< 0.91
Trichloroethylene	00079-01-6	<b>3,040</b>	<b>12</b>
Trichlorotrifluoroethane (Freon 113)	00076-13-1	<b>36</b>	<b>23</b>
Vinyl Chloride	00075-01-4	< 2.0	< 0.10
Xylene-o	00095-47-6	< 17	<b>3.1</b>
Xylene-m,p	179601-23-1	< 17	<b>10</b>
<b>Total VOCs</b> <sup>(3)</sup>		<b>3,699</b>	<b>116</b>

Notes and abbreviations on last page.

**Table 3B**  
**Vapor Sample Analytical Results**  
**Tower 102 Treatment System**  
**Second Quarter 2022<sup>(1)</sup> Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



**Notes and Abbreviations:**

- (1) Quarterly reporting period: April 1, 2022 through June 30, 2022.
- (2) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (3) 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.

<b>36</b>	Bold value indicates a detection
< 17	Compound is not detected above its laboratory quantification limit
µg/m <sup>3</sup>	micrograms per cubic meter
J	Compound detected below its reporting limit; value is estimated
ELAP	Environmental Laboratory Approval Program
NYSDOH	New York State Department of Health
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Table 4A  
 Rule 212 Evaluation  
 Tower 96 Treatment System  
 Second Quarter 2022<sup>(1)</sup> Reporting Period  
 Operable Unit 2  
 Northrop Grumman  
 Bethpage, New York



Project VOCs	CAS#	HTAC <sup>2</sup>	Tower 96 Treatment System Maximum Effluent Conc. (ug/m3) <sup>3</sup>	Tower 96 Emissions (lb/yr) <sup>4</sup>	Rule 212 Limit (lb/yr) <sup>5</sup>	Rule 212 Evaluation <sup>6</sup>	Further evaluation Required? <sup>6</sup>
1,1-Dichloroethane	75-34-3	No	7.3	1.035	100	Less than limit, Rule 212 compliant	N
1,1-Dichloroethene	75-35-4	No	71	10.066	100	Less than limit, Rule 212 compliant	N
Chloroethane	75-00-3	No	3.2	0.454	100	Less than limit, Rule 212 compliant	N
Chloroform	67-66-3	Yes	0.93	0.132	100	Less than limit, Rule 212 compliant	N
Chloromethane	74-87-3	No	0.91	0.129	100	Less than limit, Rule 212 compliant	N
cis-1,2 Dichloroethene	156-59-2	No	5.9	0.836	100	Less than limit, Rule 212 compliant	N
Methylene Chloride	75-09-2	No	2.8	0.397	100	Less than limit, Rule 212 compliant	N
Tetrachloroethene	127-18-4	Yes	1.4	0.198	1,000	Less than limit, Rule 212 compliant	N
Toluene	108-88-3	No	1.2	0.170	100	Less than limit, Rule 212 compliant	N
Trichloroethylene	79-01-6	Yes	24	3.403	500	Less than limit, Rule 212 compliant	N
Trichlorotrifluoroethane (Freon 113)	76-13-1	No	4.8	0.681	100	Less than limit, Rule 212 compliant	N
Vinyl Chloride	75-01-4	Yes	33.5	4.750	100	Less than limit, Rule 212 compliant	N

Flowrates and Normalized Modeling Impacts

Description	Flow (cfm)	AERMOD Normalized Ambient Impact at 1 g/s	
		Hourly ([µg/m <sup>3</sup> ]/[g/s])	Annual ([µg/m <sup>3</sup> ]/[g/s])
Tower 96	4,330	148.1	4.3

Notes:

The system was reconfigured to bypass the regenerative VPGAC components and treat air stripper effluent directly through the exterior VPGAC emissions control units on 3/15/22.

During this quarterly reporting period, monthly air samples were collected for laboratory analysis of VOCs as part of an enhanced sampling program implemented to more closely monitor T96 following its reconfiguration to eliminate the regenerative VPGAC components of the system. As a conservative "worst case" scenario, the sample exhibiting the greatest TVOC concentrations in system effluent from the three monthly samples (6/17/22) was compared to the Rule 212 compliance limits.

- Quarterly reporting period: April 1, 2022 through June 30, 2022.
- High toxicity air contaminant (HTAC) based on 6 CRR-NY Rule 212-2.2, Table 2 – High Toxicity Air Contaminant List.
- Maximum effluent concentrations based on sampling performed in 2022. Compounds not detected above the laboratory reporting limit are excluded from the air quality impact analysis summary.
- Emission rate calculated based on maximum effluent concentration and maximum air flow rates measured during the sampling events. Emission rate standardized at 70 °F and 1 atm.  

$$\text{Trichloroethylene (lb/yr)} = \text{Trichloroethylene } [\mu\text{g}/\text{m}^3] \times \text{Air Flow Rate } [\text{ft}^3/\text{min}] \times (1 \text{ m}^3/35.3147 \text{ ft}^3) \times (60 \text{ min}/\text{hr}) \times (0.000001 \text{ g}/1 \mu\text{g}) \times (0.0022 \text{ lb}/\text{g}) \times 8,760 \text{ hrs}/\text{yr}$$
- 100 lb/yr for non-HTACs, and mass emission limits based on Rule 212-2.2, Table 2 for HTACs.
- For HTACs, no further demonstration is required if the actual emissions are less than mass emission limit. For non-HTACs, no further demonstration is required if the actual emissions are less than 100 lbs/yr.

Table 4B  
 Rule 212 Evaluation  
 Tower 102 Treatment System  
 Second Quarter 2022<sup>(1)</sup> Reporting Period  
 Operable Unit 2  
 Northrop Grumman  
 Bethpage, New York



Project VOCs	CAS#	HTAC <sup>2</sup>	Tower 102 Treatment System Maximum Effluent Conc. (ug/m3) <sup>3</sup>	Tower 102 Emissions (lb/yr) <sup>5</sup>	Rule 212 Limit (lb/yr) <sup>6</sup>	Rule 212 Evaluation <sup>7</sup>	Further evaluation Required? <sup>7</sup>
1,1-Dichloroethane	75-34-3	No	15	3.698	100	Less than limit, Rule 212 compliant	N
1,1-Dichloroethene	75-35-4	No	27	6.657	100	Less than limit, Rule 212 compliant	N
Benzene	71-43-2	Yes	0.73	0.180	100	Less than limit, Rule 212 compliant	N
Chloroform	67-66-3	Yes	1.7	0.419	100	Less than limit, Rule 212 compliant	N
Chloromethane	74-87-3	No	1.2	0.296	100	Less than limit, Rule 212 compliant	N
cis-1,2 Dichloroethene	156-59-2	No	13	3.205	100	Less than limit, Rule 212 compliant	N
Ethylbenzene	100-41-4	No	0.78	0.192	100	Less than limit, Rule 212 compliant	N
Methylene Chloride	75-09-2	No	2.5	0.616	100	Less than limit, Rule 212 compliant	N
Tetrachloroethene	127-18-4	Yes	0.62	0.153	1,000	Less than limit, Rule 212 compliant	N
Toluene	108-88-3	No	5.3	1.307	100	Less than limit, Rule 212 compliant	N
Trichloroethylene	79-01-6	Yes	12	2.959	500	Less than limit, Rule 212 compliant	N
Trichlorotrifluoroethane (Freon 113)	76-13-1	No	23	5.671	100	Less than limit, Rule 212 compliant	N
Xylenes (Total) <sup>(4)</sup>	1330-20-7	No	13.1	3.230	100	Less than limit, Rule 212 compliant	N

Flowrates and Normalized Modeling Impacts			
Description	Flow (cfm)	AERMOD Normalized Ambient Impact at 1 g/s	
		Hourly ((µg/m <sup>3</sup> )/[g/s])	Annual ((µg/m <sup>3</sup> )/[g/s])
Tower 102	7,530	348.9	2.3

**Notes:**

- Quarterly reporting period: April 1, 2022 through June 30, 2022.
- High toxicity air contaminant (HTAC) based on 6 CRR-NY Rule 212-2.2, Table 2 – High Toxicity Air Contaminant List.
- Maximum effluent concentrations based on sampling performed in 2022. Compounds not detected above the laboratory reporting limit are excluded from the air quality impact analysis summary.
- Total for xylenes m, o, and p.
- Emission rate calculated based on maximum effluent concentration and maximum air flow rates measured during the sampling events. Emission rate standardized at 70 °F and 1 atm.

$$\text{Trichloroethylene (lb/yr)} = \text{Trichloroethylene } [\mu\text{g}/\text{m}^3] \times \text{Air Flow Rate } [\text{ft}^3/\text{min}] \times (1 \text{ m}^3/35.3147 \text{ ft}^3) \times (60 \text{ min}/\text{hr}) \times (0.000001 \text{ g}/\mu\text{g}) \times (0.0022 \text{ lb}/\text{g}) \times 8,760 \text{ hrs}/\text{yr}$$

- 100 lb/yr for non-HTACs, and mass emission limits based on Rule 212-2.2, Table 2 for HTACs.
- For HTACs, no further demonstration is required if the actual emissions are less than mass emission limit. For non-HTACs, no further demonstration is required if the actual emissions are less than 100 lbs/yr.



**Table 5A**  
**Summary of TCE Mass Removal**  
**Tower 96 Treatment System**  
**Second Quarter 2022 Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Date	TCE Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>(1)</sup>			TCE Mass Emission <sup>(2)</sup>	Percent of Allowable TCE Emissions <sup>(3)</sup>
	T96 INFLUENT	T96 MIDTRAIN	T96 EFFLUENT <sup>(5)</sup>	(lbs)	12 Month Rolling Average <sup>(8)</sup>
8/31/2021 <sup>(4)</sup>	18,100	14,800	5,250	256.0	88.1%
11/11/2021	10,000	8,650	81	2.6	57.2%
2/16/2022 <sup>(6,7)</sup>	5,430	2,580	10,900	466.9	147.7%
6/17/2022 <sup>(9)</sup>	13,400	742	24.0	1.1	143.8%

**Notes and Abbreviations:**

- <sup>(1)</sup> Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP-certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- <sup>(2)</sup> TCE Mass Emission calculated based on the exhaust air flow rate on the day of sampling and the period of time since the preceding day of sampling. TCE (lb) = TCE Concentration [ $\mu\text{g}/\text{m}^3$ ] x Days x Flow Rate [ $\text{ft}^3/\text{min}$ ] x (1 m<sup>3</sup>/35 ft<sup>3</sup>) x (60 min/hr) x (24 hr/day) x (0.000001 g/1  $\mu\text{g}$ ) x (0.0022 lb/g)
- <sup>(3)</sup> Percent of allowable TCE emissions to date is a time-weighted annual rolling average based on the 500 lb/year mass emission limit specified in the CRR-NY 212-2.2 Table 2. High Toxicity Air Contaminant List, revised February 15, 2021.
- <sup>(4)</sup> Given that Q3 2021 TCE aqueous-phase influent concentrations are comparable to typical concentration ranges observed over the last two years, it is unclear what caused this elevated vapor-phase concentration. Northrop Grumman inspected the VPGAC emission control units and determined that they were functional.
- <sup>(5)</sup> Based on vapor-phase effluent contaminant concentrations, VPGAC within the supplemental VPGAC emissions control units was replaced on March 3, 2021 and again on October 13, 2021. On both occasions, Northrop Grumman inspected the regenerative VPGAC components and identified no malfunctions/issues. Vapor-phase effluent contaminant concentrations will be monitored during upcoming sample rounds.
- <sup>(6)</sup> Following the collection of the Q1 2022 sample, the system was reconfigured to bypass the regenerative VPGAC components and treat air stripper effluent directly through the exterior VPGAC emission control units. In addition, the exterior VPGAC was changed-out in April 2022.
- <sup>(7)</sup> Given that other contaminants in this sample generally show an expected decline from influent, to midfluent, to effluent concentrations, it is unclear why the effluent TCE concentration is markedly higher than influent and midfluent TCE concentrations. Following the collection of the Q1 2022 sample, the system was reconfigured to bypass the regenerative VPGAC components and treat air stripper effluent directly through the exterior VPGAC emission control units. A follow-up vapor-phase sample was collected in April 2022, as part of enhanced monthly monitoring activities following system reconfiguration in March 2022, and following change-out of the exterior VPGAC in April 2022. As summarized on Table 3A, this sample exhibited contaminant concentrations more in-line with expectations.
- <sup>(8)</sup> **Note that where the 12-month rolling average was greater than 100%, the Rule 212 compliance limit for TCE was not exceeded. These rolling average values are due to an anomalously elevated effluent concentration associated with the February 16, 2022 sample event.**
- <sup>(9)</sup> During this quarterly reporting period, monthly air samples were collected for laboratory analysis of VOCs as part of an enhanced sampling program implemented to more closely monitor T96 following its reconfiguration to eliminate the regenerative VPGAC components of the system. As a conservative "worst case" scenario, the sample exhibiting the greatest TVOC concentrations in system effluent from the three monthly samples was compared to the Rule 212 compliance limits for this reporting period.

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
lbs	pounds
CRR-NY	Codes, Rules and Regulations of the State of New York
ELAP	Environmental Laboratory Approval Program
NYSDOH	New York State Department of Health
TCE	Trichloroethylene
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
VPGAC	vapor phase granular activated carbon

**Table 5B**  
**Summary of TCE Mass Removal**  
**Tower 102 Treatment System**  
**Second Quarter 2022 Reporting Period**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**

Date	TCE Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>(1)</sup>		TCE Mass Emission <sup>(2)</sup>		Percentage of Allowable TCE Emissions <sup>(3)</sup>	
	T102 INFLUENT	T102 EFFLUENT	lbs	lbs/day	Period	12 Month Rolling Average
8/18/2021	2,720	288	19.4	0.20	14.6%	33.9%
11/11/2021	2,610	15	0.9	0.01	0.7%	12.1%
2/16/2022	3,510	11	0.8	0.01	0.6%	4.2%
5/17/2022	3,040	12	0.7	0.01	0.6%	4.3%

**Notes and Abbreviations:**

<sup>(1)</sup> Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP-certified laboratory for VOC analyses per Modified USEPA Method TO-15.

<sup>(2)</sup> TCE Mass Emission calculated based on the exhaust air flow rate on the day of sampling and the period of time since the preceding sampling day. TCE (lb) = TCE Concentration [ $\mu\text{g}/\text{m}^3$ ] x Days x Flow Rate [ $\text{ft}^3/\text{min}$ ] x (1  $\text{m}^3/35 \text{ ft}^3$ ) x (60 min/hr) x (24 hr/day) x (0.000001 g/1 ug) x (0.0022 lb/g)

<sup>(3)</sup> Percent of allowable TCE emissions to date is a time-weighted annual rolling average based on the 500 lb/year mass emission limit specified in the CRR-NY 212-2.2 Table 2. High Toxicity Air Contaminant List, revised February 15, 2021.

- $\mu\text{g}/\text{m}^3$       Micrograms per cubic meter
- lbs            Pounds
- CRR-NY      Codes, Rules and Regulations of the State of New York
- ELAP         Environmental Laboratory Approval Program
- NYSDOH     New York State Department of Health
- TCE          Trichloroethene
- USEPA       United States Environmental Protection Agency
- VPAC         Vapor phase granulated activated carbon

**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	FW-03 FW-03 4/14/2022	FW-03 REP041422SV1 4/14/2022	GM-13D GM-13D 4/18/2022	GM-15D GM-15D 4/6/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
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 (Freon113)		< 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	<b>1.4</b>	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	<b>1.1</b>	< 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 J
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	<b>3.7</b>	< 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
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>3.2</b>	<b>3.0</b>	<b>13.4</b>	< 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		<b>0.59 J</b>	<b>0.80 J</b>	<b>8.2</b>	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>3.8</b>	<b>3.8</b>	<b>27.8</b>	<b>ND</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		< 0.24	< 0.25	<b>4.6</b>	< 0.24

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-15D2 GM-15D2 4/6/2022	GM-15I GM-15I 4/6/2022	GM-15SR GM-15SR 4/6/2022	GM-17D GM-17D 4/21/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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 J
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10 J	< 10 J	< 10 J	< 10 J
Benzene		< 0.50	<b>0.50</b>	< 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-Xylenes		< 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		<b>3.2</b>	<b>5.8</b>	< 1.0	<b>1.9</b>
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		<b>7.1</b>	<b>1.5</b>	<b>0.87 J</b>	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>10.3</b>	<b>7.8</b>	<b>0.87</b>	<b>1.9</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>3.3</b>	<b>0.54</b>	<b>0.42</b>	<b>6.7</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-17I GM-17I 4/21/2022	GM-17I REP042122SV1 4/21/2022	GM-18D GM-18D 4/14/2022	GM-18I GM-18I 4/14/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
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 (Freon113)		< 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 J	< 10 J	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10 J	< 10 J	< 10	< 10
Benzene		<b>1.0</b>	<b>0.96</b>	< 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-Xylenes		< 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		<b>14.5</b>	<b>18.6</b>	< 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		<b>2.3</b>	<b>2.4</b>	< 1.0	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>17.8</b>	<b>22.0</b>	ND	ND
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>6.1 J</b>	<b>3.9 J</b>	<b>7.3</b>	<b>7.0</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-20D GM-20D 4/19/2022	GM-20I GM-20I 4/19/2022	GM-21D GM-21D 4/11/2022	GM-21D2 GM-21D2 4/11/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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 J	< 10 J	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	<b>2.8</b>
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-Xylenes		< 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	<b>0.64 J</b>	<b>4.7</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>ND</b>	<b>ND</b>	<b>0.64</b>	<b>7.5</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>6.0 J</b>	<b>7.0 J</b>	<b>3.9</b>	<b>4.9</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID:	GM-21I	GM-21S	GM-33D2	GM-34D
	Sample ID: Date:	GM-21I 4/11/2022	GM-21S 4/11/2022	GM-33D2 4/5/2022	GM-34D 4/20/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 5.0	< 5.0	<b>2.3 J</b>	< 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 J
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0 J
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	<b>3.3 J</b>
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
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	<b>1.2</b>	<b>4.6 J</b>
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		<b>0.55 J</b>	< 1.0	<b>7.9</b>	<b>85.1 J</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>0.55</b>	<b>ND</b>	<b>11.4</b>	<b>93.0</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>3.3</b>	<b>4.4</b>	<b>9.0</b>	<b>9.4 J</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID:	GM-34D2	GM-35D2	GM-36D	GM-36D2
	Sample ID:	GM-34D2	GM-35D2	GM-36D	GM-36D2
	Date:	4/20/2022	4/7/2022	4/18/2022	4/18/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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	<b>0.70 J</b>
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	<b>0.72 J</b>
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 J	< 10	< 10
Benzene		<b>2.5</b>	< 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 J	< 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 J	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		<b>1.0</b>	< 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
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>2.4</b>	<b>4.2</b>	< 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		<b>16.7</b>	<b>28.9</b>	< 1.0	<b>3.0</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>22.6</b>	<b>33.1</b>	<b>ND</b>	<b>4.4</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>5.2 J</b>	<b>4.7</b>	<b>1.6</b>	<b>8.3</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-37D GM-37D 4/19/2022	GM-37D2 GM-37D2 4/18/2022	GM-38D GM-38D 4/21/2022	GM-38D2 GM-38D2 4/21/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	<b>0.70 J</b>
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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	<b>0.85 J</b>	<b>3.4</b>
1,1-Dichloroethene		< 1.0	< 1.0	<b>1.0</b>	<b>1.5</b>
1,2-Dichloroethane		< 1.0	< 1.0	<b>0.77 J</b>	< 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 J	< 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 J	< 1.0 J
cis-1,2-Dichloroethene		< 1.0	< 1.0	<b>0.81 J</b>	<b>0.71 J</b>
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
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	<b>2.1</b>	< 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		<b>21.8</b>	<b>0.74 J</b>	<b>146</b>	<b>45.1</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>21.8</b>	<b>0.74</b>	<b>152</b>	<b>51.4</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>0.61 J</b>	<b>0.40</b>	<b>4.6 J</b>	<b>1.8</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID:	GM-39DA	GM-39DB	GM-70D2	GM-71D2
	Sample ID:	GM-39DA	GM-39DB	GM-70D2	GM-71D2
	Date:	4/6/2022	4/6/2022	4/19/2022	4/19/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	<b>0.75 J</b>
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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	<b>1.1</b>
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	<b>0.85 J</b>
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 J	< 10 J	< 10 J	< 10 J
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-Xylenes		< 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	<b>2.1</b>	< 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		<b>1.1</b>	<b>16.5</b>	<b>5.5</b>	<b>9.3</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>1.1</b>	<b>16.5</b>	<b>7.6</b>	<b>12.0</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>4.3 J</b>	<b>2.2</b>	<b>4.8 J</b>	<b>5.2 J</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-73D GM-73D 4/7/2022	GM-73D2 GM-73D2 4/7/2022	GM-73D2 REP040722SV1 4/7/2022	GM-73D3 GM-73D3 4/7/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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 J	< 10 J	< 10 J	< 10 J
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-Xylenes		< 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	<b>1.3</b>	<b>1.2</b>	<b>1.3</b>
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		<b>42.9</b>	<b>80.9</b>	<b>78.9</b>	<b>2.3</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>42.9</b>	<b>82.2</b>	<b>80.1</b>	<b>3.6</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>0.46 J</b>	<b>1.1</b>	<b>0.94</b>	<b>0.59</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-74D GM-74D 4/5/2022	GM-74D2 GM-74D2 4/5/2022	GM-74D2 REP040522PQ1 4/5/2022	GM-74D3 GM-74D3 4/7/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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	<b>0.68 J</b>	<b>0.71 J</b>	< 1.0
1,1-Dichloroethene		< 1.0	<b>0.72 J</b>	<b>0.68 J</b>	< 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 J
Benzene		< 0.50	< 0.50	< 0.50	<b>1.9</b>
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	<b>0.91 J</b>
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	<b>0.77 J</b>	<b>0.81 J</b>	< 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
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	<b>2.8</b>	<b>2.7</b>	<b>52.5</b>
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		<b>2.7</b>	<b>8.2</b>	<b>8.3</b>	<b>7.4</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>2.7</b>	<b>13.2</b>	<b>13.2</b>	<b>62.7</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>5.3</b>	<b>2.3</b>	<b>2.1</b>	<b>0.92</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-74I GM-74I 4/5/2022	GM-75D2 GM-75D2 4/5/2022	GM-78D GM-78D 4/12/2022	GM-78D2 GM-78D2 4/13/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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	<b>0.68</b>	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0 J	< 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-Xylenes		< 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	<b>11.4</b>	< 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	<b>15.4</b>	<b>1.8</b>	<b>0.77 J</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>ND</b>	<b>15.4</b>	<b>13.9</b>	<b>0.77</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>5.8</b>	<b>5.6</b>	<b>8.7</b>	<b>10</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-78I GM-78I 4/12/2022	GM-78S GM-78S 4/12/2022	GM-78S REP041222PQ1 4/12/2022	GM-79D GM-79D 4/20/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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	<b>0.75</b>
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0 J	< 1.0 J	< 1.0 J	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0 J
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 J
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
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>1.8</b>	< 1.0	< 1.0	<b>8.1</b>
Toluene		< 1.0	< 1.0	<b>0.65 J</b>	< 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	<b>16.0</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>1.8</b>	<b>ND</b>	<b>0.65</b>	<b>24.9</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>0.66 J</b>	<b>1.7</b>	<b>1.3</b>	<b>6.1 J</b>

See notes on last page

**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID:	GM-79I <sup>(4)</sup>	GM-79I <sup>(4)</sup>	HN-24I	HN-40I
	Sample ID: Date:	GM-79I 4/20/2022	GM-79I 5/4/2022	HN-24I 4/11/2022	HN-40I 4/13/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	--	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	--	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 5.0	--	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	--	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	--	<b>1.5</b>	< 1.0
1,1-Dichloroethene		< 1.0	--	<b>0.81 J</b>	< 1.0
1,2-Dichloroethane		< 1.0	--	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	--	< 1.0	< 1.0
2-Butanone (MEK)		< 10	--	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	--	< 5.0	< 5.0
Acetone		< 10	--	< 10	< 10
Benzene		< 0.50	--	<b>0.86</b>	< 0.50
Bromodichloromethane		< 1.0	--	< 1.0	< 1.0
Bromoform		< 1.0	--	< 1.0	< 1.0
Bromomethane		< 2.0 J	--	< 2.0	< 2.0
Carbon Disulfide		< 2.0	--	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	--	< 1.0	< 1.0
Chlorobenzene		< 1.0	--	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	--	< 1.0	< 1.0
Chloroethane		< 1.0	--	< 1.0	< 1.0
Chloroform		< 1.0	--	< 1.0	< 1.0
Chloromethane		< 1.0 J	--	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	--	<b>0.65 J</b>	< 1.0
cis-1,3-Dichloropropene		< 1.0	--	< 1.0	< 1.0
Dichloromethane		< 2.0	--	< 2.0	< 2.0
Ethylbenzene		< 1.0	--	< 1.0	< 1.0
m&p-Xylenes		< 1.0	--	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	--	< 5.0	< 5.0
o-Xylene		< 1.0	--	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	--	< 1.0	< 1.0
Tetrachloroethene		< 1.0	--	<b>12.6</b>	<b>2.0</b>
Toluene		< 1.0	--	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	--	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	--	< 1.0	< 1.0
Trichloroethene		<b>2.0</b>	--	<b>7.3</b>	<b>0.96 J</b>
Vinyl chloride		< 1.0	--	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>2.0</b>	<b>--</b>	<b>23.7</b>	<b>3.0</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>--</b>	<b>3.6</b>	<b>0.81</b>	<b>0.33</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID: Sample ID: Date:	HN-40S HN-40S 4/13/2022	HN-42I HN-42I 4/12/2022	HN-42S HN-42S 4/12/2022	MW-3-1 MW-3-1 4/19/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	<b>0.64 J</b>
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 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	<b>5.2</b>
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	<b>2.6</b>
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 J
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0 J	< 1.0 J	< 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	<b>0.54 J</b>
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	<b>3.2</b>
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
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>2.4</b>	<b>5.0</b>	< 1.0	<b>12.2</b>
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	<b>0.64 J</b>	< 1.0	<b>61.9</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	<b>1.1</b>
<b>Total VOCs<sup>(3)</sup></b>		<b>2.4</b>	<b>5.6</b>	ND	<b>87.4</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		< 0.24	<b>0.28</b>	< 0.23	<b>4.3 J</b>

See notes on last page



**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



Constituent (units in µg/L)	Well ID:	N-10624	N-10627
	Sample ID:	N-10624	N-10627
	Date:	4/20/2022	4/20/2022
<b><u>Volatile Organic Compounds (VOCs)<sup>(1, 2)</sup></u></b>			
1,1,1-Trichloroethane		< 1.0	< 1.0
1,1,1,2-Tetrachloroethane		< 1.0	< 1.0
1,1,1,2-trichloro-1,2,2-trifluoroethane (Freon113)		< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 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 J	< 1.0
Bromomethane		< 2.0 J	< 2.0 J
Carbon Disulfide		< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0
Chloroform		< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0 J
cis-1,2-Dichloroethene		< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 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)		< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0
Toluene		< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0
Trichloroethene		< 1.0	<b>0.64 J</b>
Vinyl chloride		< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>ND</b>	<b>0.64</b>
<b>1,4 Dioxane<sup>(1,2)</sup></b>		<b>2.0 J</b>	<b>4.6 J</b>

See notes on last page

**Table 6**  
**Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring Wells**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**



**Notes and Abbreviations:**

- (1) Samples were analyzed for VOCs using USEPA Method 8260C. Samples were analyzed for 1,4-dioxane using USEPA Method 8270D-SIM.
- (2) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
- (3) TVOC concentrations are rounded to the number of decimal places of the individual VOC with the least precision (decimal places), including whole numbers with no decimal place.
- (4) GM-79I was initially sampled for VOCs and 1,4-dioxane on April 20, 2022; however, the 1,4-dioxane bottleware was damaged during transit to the laboratory. GM-79I was subsequently resampled on May 4, 2022 for 1,4-dioxane only.

<b>Bold</b>	Constituent detected
J	Constituent value is estimated
REP	Blind Replicate Sample
µg/L	Micrograms per liter
VOCs	Volatile Organic Compounds
<1.0	Compound not detected above its laboratory quantification limit
ND	Not Detected

**Table 7**  
**Concentrations of Metals and 1,4-Dioxane in Monitoring Wells<sup>(1)</sup>**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**

Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-15SR GM-15SR 4/6/2022	GM-78I GM-78I 4/12/2022	GM-78S GM-78S 4/12/2022	GM-78S REP041222PQ1 4/12/2022	MW-01GF MW-01GF 4/13/2022	MW-02GF MW-02GF 4/13/2022	PLT1 MW-04 PLT1 MW-04 4/13/2022	PLT1 MW-05 PLT1 MW-05 4/13/2022	PLT1 MW-06 PLT1 MW-06 4/13/2022
<b>Metals <sup>(2)</sup></b>										
Cadmium (Total)		--	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	--	--	--
Cadmium (Dissolved)		--	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	--	--	--
Chromium (Total)		<b>128</b>	< 10	< 10	< 10	< 10	<b>293</b>	< 10	<b>258</b>	<b>157</b>
Chromium (Dissolved)		<b>126</b>	< 10	< 10	< 10	< 10	<b>290</b>	< 10	<b>258</b>	<b>156</b>
<b>1,4-Dioxane <sup>(3)</sup></b>		<b>0.42</b>	<b>0.66 J</b>	<b>1.7</b>	<b>1.3</b>	<b>4.7</b>	<b>6.4</b>	<b>1.6</b>	<b>0.62</b>	<b>0.15 J</b>

**Notes and Abbreviations:**

<sup>(1)</sup> Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).

<sup>(2)</sup> Samples analyzed for total unfiltered and dissolved filtered cadmium and chromium using USEPA Method 6010C.

<sup>(3)</sup> Samples were analyzed for 1,4-dioxane using USEPA Method 8270D-SIM.

REP Blind Replicate sample  
µg/L Micrograms per liter  
-- Not analyzed  
<3.0 Compound not detected above its laboratory quantification limit  
**Bold** Constituent detected  
B Contamination found in associated blank  
J Constituent value is estimated

Table 8

Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells <sup>(1)</sup>  
 Second Quarter 2022  
 Operable Unit 2  
 Northrop Grumman  
 Bethpage, New York



Constituents (units in ug/L)	Well ID: Sample ID: Date:	BPOW 1-1 BPOW 1-1 5/9/2022	BPOW 1-2 BPOW 1-2 5/9/2022	BPOW 1-3 BPOW 1-3 5/9/2022	BPOW 1-4 BPOW 1-4 5/9/2022
<b>Volatile Organic Constituents <sup>(2, 4)</sup></b>					
1,1,1-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-trichloro-1,2,2-trifluoroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50
2-Butanone (MEK)		< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone		< 2.0	< 2.0	< 2.0	< 2.0
Acetone		< 5.0	< 5.0	< 5.0	< 5.0
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Bromoform		< 0.50	< 0.50	< 0.50	< 0.50
Bromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Disulfide		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Tetrachloride		< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene		< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroform		< 0.50	< 0.50	< 0.50	< 0.50
Chloromethane		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene		< 0.50	< 0.50	< 0.50	< 0.50
m&p-Xylenes		< 0.50	< 0.50	< 0.50	< 0.50
Methyl N-Butyl Ketone (2-Hexanone)		< 2.0	< 2.0	< 2.0	< 2.0
o-Xylene		< 0.50	< 0.50	< 0.50	< 0.50
Styrene (Monomer)		< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene		< 0.50	< 0.50	< 0.50	< 0.50
Toluene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene		<b>0.46 J</b>	<b>0.51</b>	< 0.50	< 0.50
Vinyl chloride		< 0.50	< 0.50	< 0.50	< 0.50
<b>TVOCs <sup>(4)</sup></b>		<b>0.46</b>	<b>0.51</b>	<b>ND</b>	<b>ND</b>
<b>1,4 Dioxane <sup>(2,3)</sup></b>		<b>&lt; 0.200</b>	<b>&lt; 0.200</b>	<b>0.111 J</b>	<b>0.236</b>

See notes and abbreviations on last page.

Table 8

Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells <sup>(1)</sup>  
 Second Quarter 2022  
 Operable Unit 2  
 Northrop Grumman  
 Bethpage, New York



Constituents (units in ug/L)	Well ID: Sample ID: Date:	BPOW 1-5 BPOW 1-5 5/9/2022	BPOW 1-6 BPOW 1-6 5/9/2022	BPOW 2-1 BPOW 2-1 5/10/2022	BPOW 2-2 BPOW 2-2 5/10/2022
<b>Volatile Organic Constituents <sup>(2, 4)</sup></b>					
1,1,1-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-trichloro-1,2,2-trifluoroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50
2-Butanone (MEK)		< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone		< 2.0	< 2.0	< 2.0	< 2.0
Acetone		< 5.0	< 5.0	< 5.0	< 5.0
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Bromoform		< 0.50	< 0.50	< 0.50	< 0.50
Bromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Disulfide		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Tetrachloride		< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene		< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroform		< 0.50	< 0.50	< 0.50	< 0.50
Chloromethane		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene		< 0.50	< 0.50	< 0.50	< 0.50
m&p-Xylenes		< 0.50	< 0.50	< 0.50	< 0.50
Methyl N-Butyl Ketone (2-Hexanone)		< 2.0	< 2.0	< 2.0	< 2.0
o-Xylene		< 0.50	< 0.50	< 0.50	< 0.50
Styrene (Monomer)		< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene		< 0.50	< 0.50	< 0.50	< 0.50
Toluene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
Vinyl chloride		< 0.50	< 0.50	< 0.50	< 0.50
<b>TVOCs <sup>(4)</sup></b>		ND	ND	ND	ND
<b>1,4 Dioxane <sup>(2,3)</sup></b>		< 0.200	< 0.200	<b>0.966</b>	<b>0.679</b>

See notes and abbreviations on last page.

Table 8

Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells <sup>(1)</sup>  
 Second Quarter 2022  
 Operable Unit 2  
 Northrop Grumman  
 Bethpage, New York



Constituents (units in ug/L)	Well ID: Sample ID: Date:	BPOW 2-3 BPOW 2-3 5/10/2022	BPOW 3-1 BPOW 3-1 5/10/2022	BPOW 3-2 BPOW 3-2 5/10/2022	BPOW 3-3 BPOW 3-3 5/5/2022
<b>Volatile Organic Constituents <sup>(2, 4)</sup></b>					
1,1,1-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-trichloro-1,2,2-trifluoroethane		< 1.0	< 1.0	< 1.0	<b>0.48 J</b>
1,1,2-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50
2-Butanone (MEK)		< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone		< 2.0	< 2.0	< 2.0	< 2.0
Acetone		< 5.0	< 5.0	< 5.0	< 5.0
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Bromoform		< 0.50	< 0.50	< 0.50	< 0.50
Bromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Disulfide		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Tetrachloride		< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene		< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroform		< 0.50	< 0.50	< 0.50	< 0.50
Chloromethane		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene		< 0.50	< 0.50	< 0.50	< 0.50
m&p-Xylenes		< 0.50	< 0.50	< 0.50	< 0.50
Methyl N-Butyl Ketone (2-Hexanone)		< 2.0	< 2.0	< 2.0	< 2.0
o-Xylene		< 0.50	< 0.50	< 0.50	< 0.50
Styrene (Monomer)		< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene		< 0.50	< 0.50	< 0.50	< 0.50
Toluene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
Vinyl chloride		< 0.50	< 0.50	< 0.50	< 0.50
<b>TVOCs <sup>(4)</sup></b>		<b>ND</b>	<b>ND</b>	<b>ND</b>	<b>0.48</b>
<b>1,4 Dioxane <sup>(2,3)</sup></b>		<b>4.40</b>	<b>0.713</b>	<b>1.46</b>	<b>9.09</b>

See notes and abbreviations on last page.

Table 8

Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells <sup>(1)</sup>  
 Second Quarter 2022  
 Operable Unit 2  
 Northrop Grumman  
 Bethpage, New York



Constituents (units in ug/L)	Well ID: Sample ID: Date:	BPOW 3-4 BPOW 3-4 5/5/2022	BPOW 4-1R BPOW 4-1R 5/5/2022	BPOW 4-1R REP050522SV1 5/5/2022	BPOW 4-2R BPOW 4-2R 5/5/2022
<b>Volatile Organic Constituents <sup>(2, 4)</sup></b>					
1,1,1-Trichloroethane		<b>0.34 J</b>	< 0.50	< 0.50	< 0.50
1,1,2,2-Tetrachloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-trichloro-1,2,2-trifluoroethane		<b>3.7</b>	<b>30.2</b>	<b>35.8</b>	<b>1.4</b>
1,1,2-Trichloroethane		<b>1.1</b>	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane		<b>0.64</b>	< 0.50	< 0.50	< 0.50
1,1-Dichloroethene		<b>5.2</b>	<b>0.70</b>	<b>0.87</b>	< 0.50
1,2-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50
2-Butanone (MEK)		< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone		< 2.0	< 2.0	< 2.0	< 2.0
Acetone		< 5.0	< 5.0	< 5.0	< 5.0
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Bromoform		< 0.50	< 0.50	< 0.50	< 0.50
Bromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Disulfide		< 0.50	< 0.50	< 0.50	< 0.50
Carbon Tetrachloride		<b>1.0</b>	< 0.50	<b>0.30 J</b>	< 0.50
Chlorobenzene		< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane		< 0.50	< 0.50	< 0.50	< 0.50
Chloroform		<b>1.2</b>	<b>0.18 J</b>	<b>0.23 J</b>	< 0.50
Chloromethane		< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene		<b>2.0</b>	<b>0.22 J</b>	<b>0.30 J</b>	< 0.50
cis-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane		< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene		< 0.50	< 0.50	< 0.50	< 0.50
m&p-Xylenes		< 0.50	< 0.50	< 0.50	< 0.50
Methyl N-Butyl Ketone (2-Hexanone)		< 2.0	< 2.0	< 2.0	< 2.0
o-Xylene		< 0.50	< 0.50	< 0.50	< 0.50
Styrene (Monomer)		< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene		< 0.50	< 0.50	< 0.50	< 0.50
Toluene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene		<b>150 D</b>	<b>1.2</b>	<b>1.7</b>	<b>0.33 J</b>
Vinyl chloride		< 0.50	< 0.50	< 0.50	< 0.50
<b>TVOCs <sup>(4)</sup></b>		<b>165</b>	<b>32.5</b>	<b>39.2</b>	<b>1.7</b>
<b>1,4 Dioxane <sup>(2,3)</sup></b>		<b>7.91</b>	<b>4.08</b>	<b>3.65</b>	<b>2.43</b>

See notes and abbreviations on last page.

**Table 8**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Outpost Wells <sup>(1)</sup>**  
**Second Quarter 2022**  
**Operable Unit 2**  
**Northrop Grumman**  
**Bethpage, New York**

**Notes and Abbreviations:**

- (1) These outpost wells have been recently repurposed for use as plume monitoring wells per the June 2015 Groundwater Monitoring Plan Addendum (ARCADIS of New York, Inc., 2015) as conditionally approved by the NYSDEC (August 25, 2015). Therefore, TVOC trigger levels that may have been previously established are no longer shown.
- (2) Samples were analyzed for VOCs using USEPA Method 524.2. Samples were analyzed for 1,4-dioxane using USEPA Method 522.
- (3) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
- (4) TVOC concentrations are rounded to the number of decimal places of the individual VOC with the least precision (decimal places), including whole numbers with no decimal place.

<b>Bold</b>	Value indicates constituent detected
TVOCs	Total Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
µg/L	micrograms per liter
<0.5	Compound not detected above its laboratory quantification limit
D	Result was reported from the diluted run
J	Value is estimated concentration
ND	Not Detected

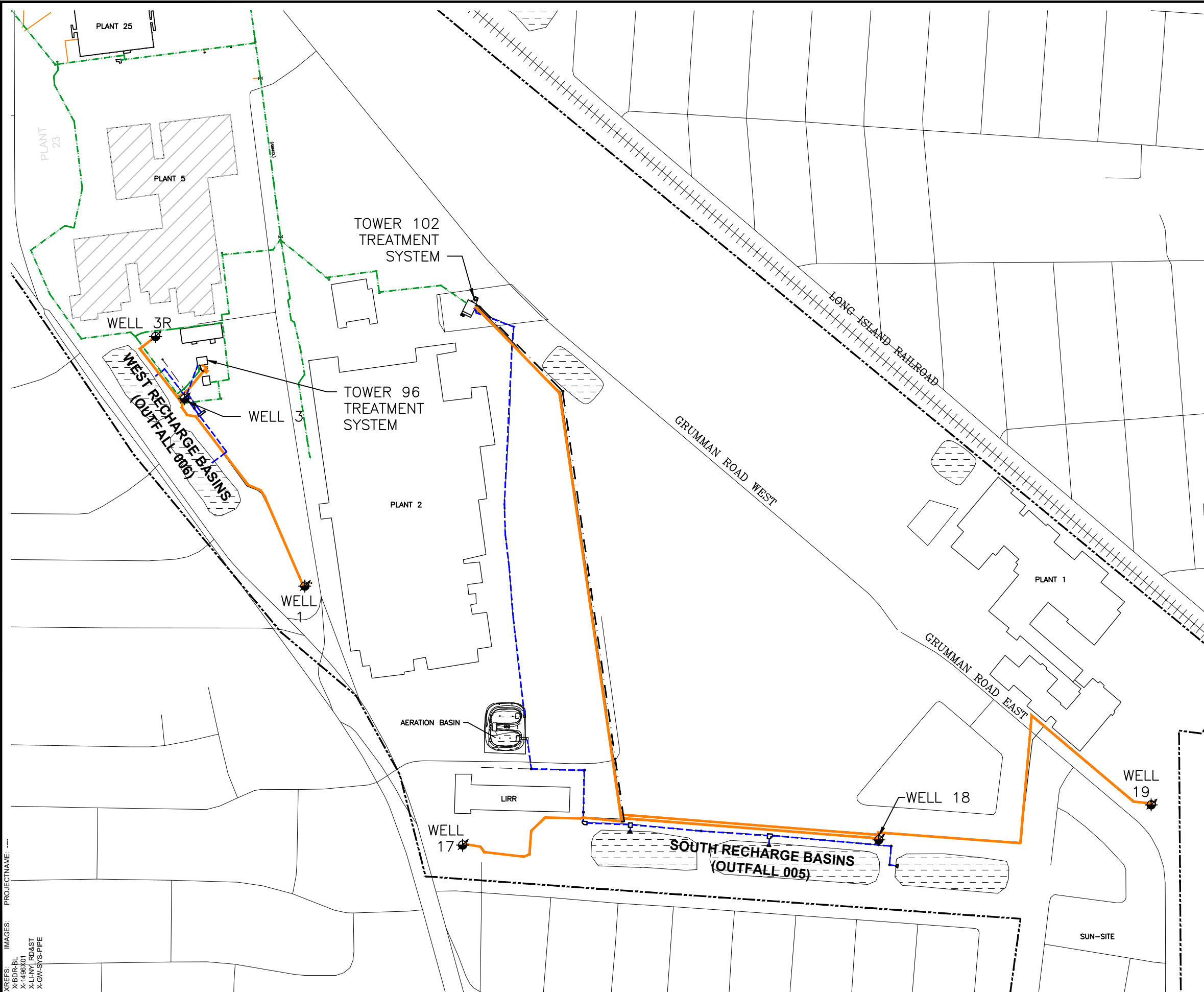


# Figures



CITY: SYRACUSE, NY DIVISION: ENVIRONMENTAL SERVICES PROJECT: NORTHROP GRUMMAN BETHPAGE OPERABLE UNIT 2 ONCT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SITE PLAN LAYOUT 2 - 2022.08.12 9:31 AM ACADVER: 24.28 (LMS TECH) PAGES: 24.28 (LMS TECH) PLOTSTYLETABLE: ... PLOTTED: 8/12/2022 9:33 AM BY: SMALL, BRIAN

PROJECTNAME: ...  
 IMAGES: ...  
 XREFS: ...  
 X-BDR-BL  
 X-1466-KO  
 X-LL-NT-LRD&ST  
 X-GW-SYS-PIPE



**LEGEND:**

- FORMER NORTHROP GRUMMAN PROPERTY LINE
- INFLUENT LINE
- BYPASS
- STORM DRAIN (EFFLUENT)
- NON POTABLE WATER DISTRIBUTION LINE (EFFLUENT)
- +++++ RAILROAD TRACKS
- x-x-x- FENCE
- WELL 18 REMEDIAL WELL
- BASIN
- ONCT ON-SITE CONTAMINANT

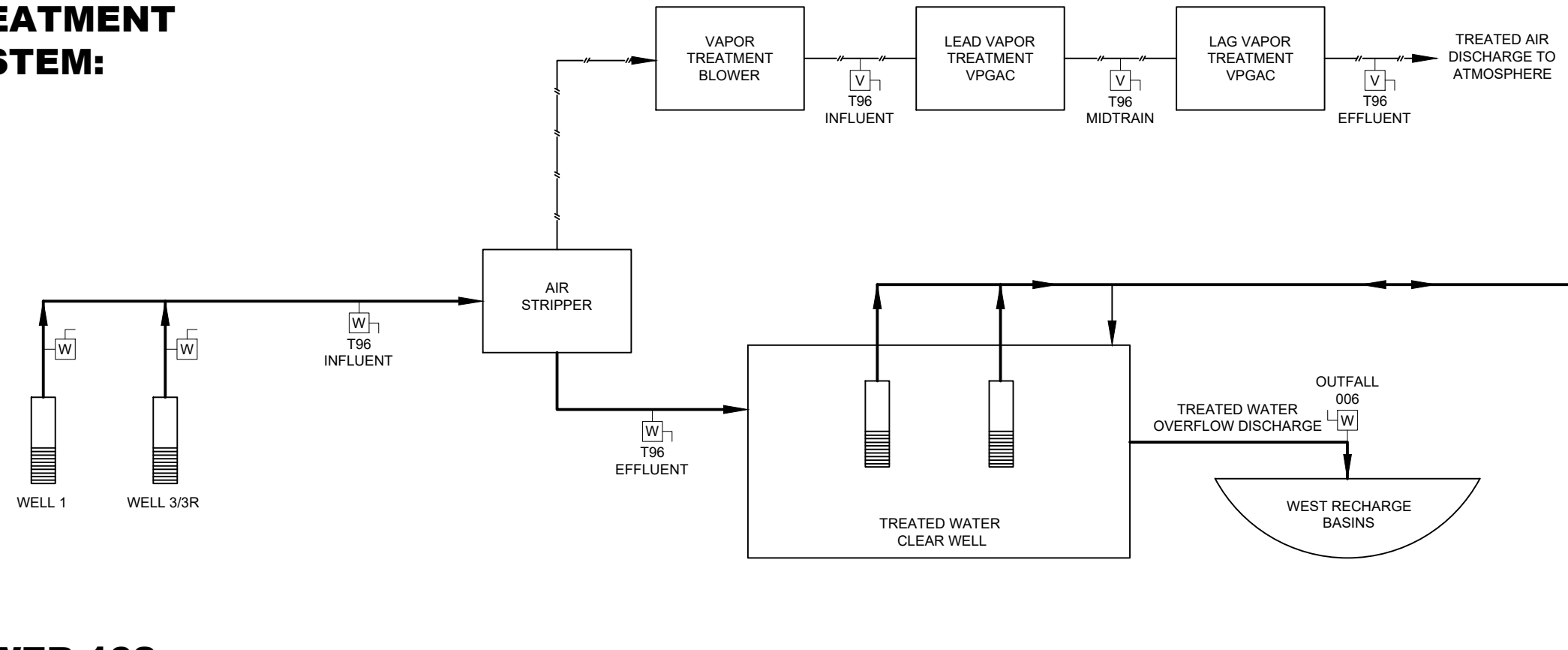
**NOTES:**

1. DRAWING IS NOT TO BE USED FOR DESIGN PURPOSES. LAYOUT OF PIPING IS FOR REPRESENTATION ONLY (LOCATIONS ARE APPROXIMATE).
2. THE PIPING REPRESENTED IN THIS DRAWING MAY BE CONSTRUCTED OF CAST IRON PIPE (CIP), DUCTILE IRON PIPE (DIP), ASBESTOS CEMENT PIPE (ACP) OR TRANSITE, OR A COMBINATION OF THESE PIPE TYPES.

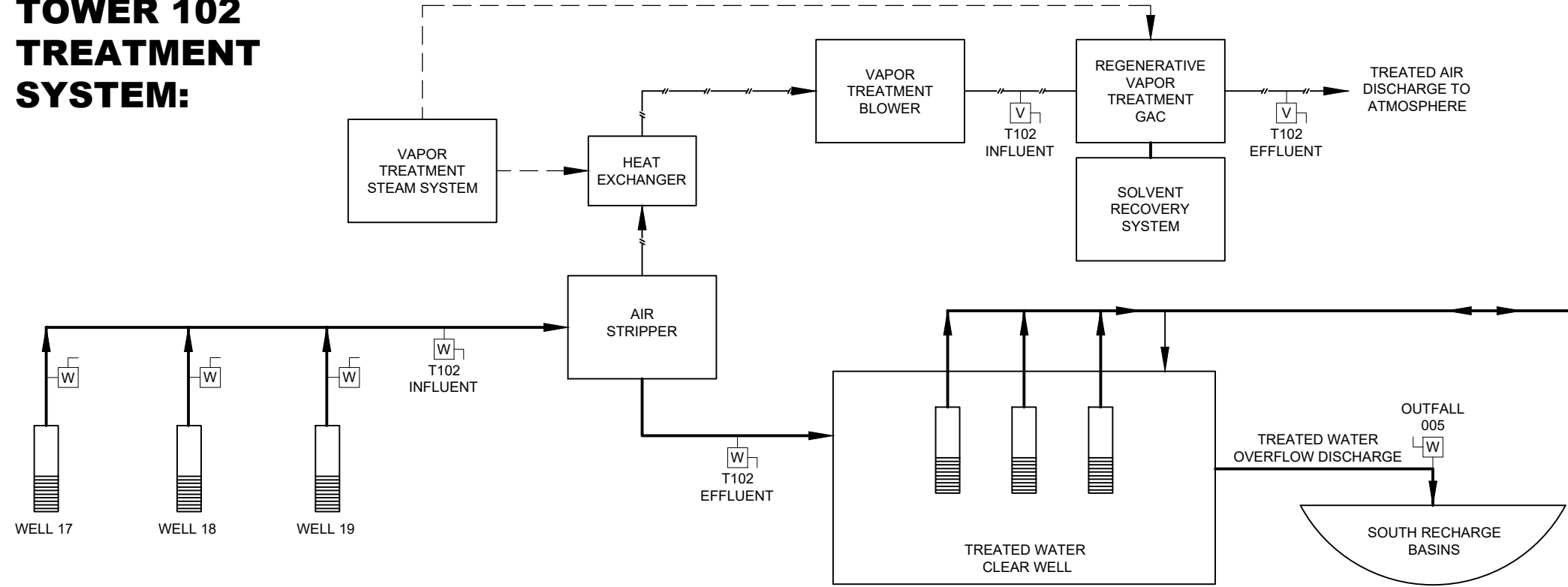
NORTHROP GRUMMAN BETHPAGE, NEW YORK OPERABLE UNIT 2	
<b>ONCT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SITE PLAN</b>	
	FIGURE <b>2</b>

CITY: MANCHESTER DIV/GROUP: ENV/CAD DB: B SMALL PM: TM  
 C:\Users\BSS\mail\arcadis\us\northrop-grumman\bethpage\BETHPAGE-GRU\MAN-BETHPAGE SYSTEM.dwg LAYOUT: 3  
 SAVED: 8/8/2022 5:00 PM ACADVER: 24.2S (LMS TECH) PAGES: 24.2S (LMS TECH) PAGES: 24.2S (LMS TECH) PAGES: 24.2S (LMS TECH)  
 PLOTTED: 8/8/2022 5:01 PM BY: SMALL, BRIAN  
 XREFS: IMAGES: PROJECTNAME: ---

## TOWER 96 TREATMENT SYSTEM:



## TOWER 102 TREATMENT SYSTEM:



NOTE:  
 SCHEMATIC REPRESENTS SYSTEM CONFIGURATIONS AT THE TIME OF SAMPLE LOCATION EVENTS, AFTER T96 RECONFIGURATION TO BYPASS THE REGENERATIVE VAPOR-PHASE GAC COMPONENTS

- LEGEND:
- PROCESS WATER
  - - - PROCESS AIR
  - - - - STEAM
  - SAMPLE LOCATION
  - W WATER SAMPLE
  - V VAPOR SAMPLE
  - ONCT ON-SITE CONTAMINANT

NORTHROP GRUMMAN  
 BETHPAGE, NEW YORK  
**OPERABLE UNIT 2**

**ONCT GROUNDWATER  
 EXTRACTION AND TREATMENT  
 SYSTEM SCHEMATIC**

**ARCADIS**

FIGURE  
**3**