Mr. Jason Pelton
Project Manager
New York State Department of Environmental Conservation
Remedial Bureau D
625 Broadway
Albany, New York 12233-7015

Arcadis of New York, Inc.
Two Huntington
Quadrangle
Suite 1S10
Melville
New York 11747
Phone: 631 249 7600
Fax: 631 249 7610

Subject: Second Quarter 2021 Progress Report
Northrop Grumman
Operable Unit 2, NYSDEC Site ID # 1-30-003A
Bethpage, New York
Our Ref: 30062156.RPTI4
Date: July 9, 2021

Dear Jason,

In accordance with Appendix “A”, Section XIII of Administrative Order on Consent (AOC) Index # W1-118-14-12, this letter reports Operable Unit 2 (OU2) activities performed by Northrop Grumman during the Second Quarter of 2021 (April through June 2021). Activities planned for the Third Quarter of 2021 (July to August 2021) are also described, as applicable.

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

As this is an ongoing remediation project, Northrop Grumman submits these Progress Reports on a quarterly frequency and the next Progress Report will be submitted following the close of September 2021.

OU2 ACTIVITIES CONDUCTED DURING SECOND QUARTER 2021

OU2 On-Site Containment (ONCT) System

- Continued Operation, Maintenance, and Monitoring (OM&M) of the OU2 ONCT system.
- Completed routine Second Quarter 2021 ONCT system sampling.
- Notable shutdown events (generally shutdowns of 3 hours or greater, excluding brief or short-term maintenance events) during this period are summarized below. In each instance, the system was fully restored following any needed assessments and repairs, unless indicated otherwise:
  - The Tower 102 System shut down on 4/9/21 through 4/10/21. Northrop Grumman identified that high vapor-phase moisture content caused the system shutdown, and therefore temporarily operated the

system with reduced influent from the remedial wells during this downtime event to accelerate drying of the regenerative vapor-phase granular activated carbon (RVPGAC). In addition, the influent steam valves were replaced on 4/21/21 to reduce the likelihood of future elevated vapor-phase moisture content issues.

- Well 18 of the Tower 102 system shut down on 4/22/21 through 4/23/21 due to a variable frequency drive (VFD) failure. The VFD was temporarily repaired while a replacement was ordered, given that the malfunctioning VFD would not allow the well to pump more than approximately 810 gallons per minute (gpm), if needed. The Tower 102 system was then shut down on 5/27/21 to allow for the installation of a replacement VFD.
- The Tower 96 System was shut down on 4/28/21 through 4/30/21 and 5/5/2021 through 5/12/21 due to external blower bearing vibration issues. Ultimately, the blower bearings, compressor wheel, and compressor shaft were replaced, and the blower wheel was rebalanced.
- The Tower 96 System shut down on 6/11/21 through 6/15/21, as it was determined that an identified low-voltage condition caused the external blower to trip the starter panel. As a result, Northrop Grumman requested that Calpine increase the voltage to the external blower. The external blower again tripped the starter panel and shut down the system from 6/15/21 through 6/17/21. As a result, a new starter was ordered, and the system was re-started with a fan blowing on the starter panel (temporarily).
- The Tower 96 System shut down on 6/21/2021 through 6/22/21 due to an issue with the system air flow pressure switch. Following initial electrical repairs, Well 3R was restarted on 6/26/21 and, following further electrical and VFD repairs, Well 1 was restarted on 6/28/21. Although the system was operational with Well 3R on 6/26/21, the system air flow pressure switch was ultimately repaired on 6/28/21.

Regional Groundwater Monitoring & Outpost Well Monitoring

- Initiated and completed Second Quarter 2021 routine OU2 groundwater monitoring activities.
- Completed collection of semi-annual water-level measurements from wells in Northrop Grumman's routine monitoring program.
- Prepared and submitted the First Quarter 2021 sampling event data (Form 1 data) to NYSDEC.
- Data not routinely reported are provided for the current period as follows:
    - Analytical data associated with purge water generated during the and First and Second Quarter 2021 sampling events (Location ID "DISCHARGE") are provided in Table 1. Purge water is discharged to the Nassau County Department of Public Works (NCDPW) sewer system, as authorized by NCDPW.

Northrop Grumman Cooperation with Navy

- Coordinated with Navy and completed Second Quarter 2021 sampling of additional outpost wells (BPOW5 and BPOW6 clusters) and select plume monitoring wells, as highlighted on Figure 1.
- Completed collection of semi-annual water level measurements from select wells in Navy's routine monitoring program.
- Prepared and submitted to Navy for distribution the First Quarter 2021 sampling event data (Form 1 data and associated data packages, including analytical data table, laboratory reports, data validation reports, and Electronic Data Deliverables (EDDs)), associated with Navy-owned wells.

Other

- Prepared and submitted the First Quarter 2021 AOC Quarterly Progress Report.
- Prepared and submitted the First Quarter 2021 OU2 OM&M Report.

OU2 ACTIVITIES SCHEDULED FOR THIRD QUARTER 2021

OU2 ONCT System

- Continue OM&M of the OU2 ONCT system.
- Conduct routine Third Quarter 2021 ONCT system sampling.

Regional Groundwater Monitoring & Outpost Well Monitoring

- Conduct Third Quarter 2021 sampling from wells in Northrop Grumman's routine monitoring program (BPOW 2 cluster and GM-21D2).

Northrop Grumman Cooperation with Navy

- Conduct the Third Quarter 2021 sampling of additional outpost wells (BPOW5 and BPOW6 clusters).
- Prepare and submit to Navy for distribution the Second Quarter 2021 sampling data (Form 1 data and associated data packages) for outpost wells (BPOW5 and BPOW6 clusters) and select monitoring wells (RE wells and TT wells).

Other

- Prepare and submit the Second Quarter 2021 AOC Quarterly Progress Report.
- Prepare and submit the Second Quarter 2021 OU2 OM&M Report.

Mr. Jason Pelton
New York State Department of Environmental Conservation
July 9, 2021

Sincerely,
Arcadis of New York, Inc.

Art Zahradnik
Project Manager

Email: art.zahradnik@arcadis.com
Direct Line: 631.391.5208

CC. James Sullivan, NYSDOH
Steven Scharf, NYSDEC
Donald Hesler, NYSDEC
Andrew Guglielmi, NYSDEC
Edward J. Hannon, Northrop Grumman
Jill Palmer, Esq., Northrop Grumman
Daniel Riesel, Esq., Sive, Paget & Riesel, P.C.
Mark A. Chertok, Esq., Sive, Paget & Riesel, P.C.
James Watts-Gravette, NAVFAC Mid-Atlantic Environmental
Bethpage Public Library
Carlo San Giovanni, Arcadis
Chris Engler, Arcadis
Mike Wolfert, Arcadis
File, Arcadis

Enclosure

Tables

Table 1
Summary of Analytical Data
Operable Unit 2
Northrop Grumman
Bethpage, New York

Constituents	Location ID: / Sample ID: / Date:	DISCHARGE[2] DISCHARGE 5/12/2021	DISCHARGE[2] DISCHARGE 5/25/2021
Volatile Organic Compounds (units in µg/L)[1]			
1,1,1-Trichloroethane		< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 2.0
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	< 5.0
4-Methyl-2-Pentanone		< 5.0	< 5.0
Acetone		< 10	< 5.0
Benzene		< 0.50	< 1.0
Bromodichloromethane		< 1.0	< 1.0
Bromoform		< 1.0	< 1.0
Bromomethane		< 2.0	< 1.0
Carbon Disulfide		< 2.0	< 1.0
Carbon Tetrachloride		< 1.0	< 1.0
CFC-11		--	< 2.0
CFC-12		--	< 2.0
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
cis-1,2-Dichloroethene		< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0
Dichloromethane		< 2.0	< 1.0
Ethylbenzene		< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0
Methyl-tert-butylether		--	< 1.0
o-Xylene		< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 2.0
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		**0.97 J**	**7.6**
Vinyl chloride		< 1.0	< 1.0
Total VOCs[3]		**0.97**	**7.6**

Notes and Abbreviations:

(1) Monitoring well purge water discharge sample analysis by VOC Method 624.1.

(2) The sample is collected from monitoring well purge water discharged as part of the First and Second Quarter 2021 sampling events.

(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.

Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2016), or as received as final from

Bold	Indicates a Detection
<1.0	Constituent not detected above its laboratory quantification limit.
-	Not analyzed
J	Value is estimated concentration
OU2	Operable Unit 2
VOC	Volatile Organic Compound

Figures

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
C:\Users\gstowell\BIM 360\Arcadis\ANA - Northrop Grumman\Project Files\OU2 ONCT OM&M Program\2019\01-DWG\OU2-GWMWN-A1.dwg LAYOUT: 1 SAVED: 9/3/2019 1:14 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 9/3/2019 1:15 PM BY: STOWELL, GARY

XREFS: IMAGES: PROJECTNAME: ----
X-1496X01
X-BDR-DP
X-LI-NY_RD&ST

HN-24I HN-24S FW-03 HN-42S HN-42I GM-13D HN-40I HN-40S GM-16I GM-16SR N-10597 MW-3-1 WELL 3R MW-1GF WELL 3 GM-17I GM-17SR GM-17D WELL 1 MW-2GF GM-18D GM-18I GM-18S GM-39DB GM-39DA GM-33D2 N-10631 WELL 17 GM-20I GM-21D2 GM-20D GM-21S GM-21I GM-21D N-10633 GM-73D3 WELL 18 GM-73D GM-73D2 GM-74D3 GM-74D2 GM-74I GM-74D WELL 19 PLT1MW-05 PLT1MW-06 PLT1MW-04 GM-19SR GM-19I GM-15D2 GM-15D GM-15SR GM-15I GM-79I GM-79S GM-79D GM-37D GM-37D2 GM-71D2 RE106D2 GM-78D2 GM-78D N-10600 RE106D1 GM-78S RE106D3 GM-78I N-9921 RE107D1 RE107D2 RE107D3 N-10624 GM-75D2 N-10627 N-10634 RE109D1 RE109D2 RE109D3 GM-70D2 GM-35D2 GM-36D GM-36D2 N-10821 GM-34D GM-34D2 GM-38D GM-38D2 RE121D1 RE121D2 RE124D1 RE124D2 RE116D1 RE114D1 RE114D3 RE114D2 RE115D1 RE115D2 BPOW 4-2R BPOW 4-1R BPOW 2-2 BPOW 2-3 BPOW 2-1 BPOW 3-4 BPOW 3-3 BPOW 3-2 BPOW 3-1 RE128D1 RE128D2 RE127D1 RE127D2 BPOW 5-1 BPOW 5-2 BPOW 5-3 RE130D2 RE130D1 BPOW 5-6 RE118D1 BPOW 5-5 BPOW 5-7 RE119D1 BPOW 5-4 RE129D2 RE129D1 TT102D2 TT102D RE133D2 RE133D1 BPOW 6-4 BPOW 6-3 BPOW 6-5 BPOW 6-6 BPOW 6-2 BPOW 6-1 BPOW 1-4 BPOW 1-5 BPOW 1-6 BPOW 1-1 BPOW 1-2 BPOW 1-3

PLANT 3 PLANT 25 PLANT 5 PLANT 2 PLANT 1 FUEL DEPOT AREA
OU2 MAIN FACILITY REMEDIAL SYSTEM (TOWER 66)
OU2 MAIN FACILITY REMEDIAL SYSTEM (TOWER 102)
EXISTING OU2 TREATMENT SYSTEMS
GRUMMAN ROAD
CENTRAL AVENUE
BROADWAY
BETHPAGE STATE PARKWAY
SEAFORD-OYSTER BAY EXPRESSWAY
LONG ISLAND RAILROAD
BLOOMINGDALE ROAD
(GARDINER'S AVENUE)
MALLARD ROAD
LOWLAND ROAD
NORTH WANTAGH AVE.
HICKSVILLE ROAD
STEWART AVENUE
HEMPSTEAD TURNPIKE
RANCH LANE
BOUNDARY AVENUE
SOUTHERN STATE PARKWAY
NORTH BROADWAY

LEGEND:

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER NAVY SITE
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2009)
- DENOTES NAVY OWNED PROPERTY (AS OF 2014)
- RECHARGE BASIN
- WELL LOCATION
- GREEN HIGHLIGHT INDICATES WELLS SAMPLED BY ARCADIS ON BEHALF OF NAVY

0 800' 1600'
APPROXIMATE SCALE IN FEET

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK

WELL LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1