Mr. Jason Pelton
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Subject: Fourth Quarter 2021 Progress Report
Northrop Grumman
Operable Unit 2, NYSDEC Site ID # 1-30-003A
Bethpage, New York
Our Ref: 30062156.RPTI4
Date: January 10, 2022

Dear Mr. Pelton,

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 Fourth Quarter of 2021 (October through December 2021). Activities planned for the First Quarter of 2022 (January to March 2022) 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 March 2022.

OU2 ACTIVITIES CONDUCTED DURING FOURTH QUARTER 2021

OU2 On-Site Containment (ONCT) System

- Continued Operation, Maintenance, and Monitoring (OM&M) of the OU2 ONCT system.
- Completed routine Fourth 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 was shut down on 10/20/21 for planned maintenance in the treatment building wet well.

- Well 18 of the Tower 102 System shut down multiple times this reporting period due to variable frequency drive (VFD) wiring and electrical feed issues and associated evaluation, coordination with PSEG, and repairs. As such, Well 18 was shut down as follows during this reporting period: approximately 5 days in October, approximately 7 days in November, and approximately 15 days in December.
- The Tower 96 System was shut down on 10/13/21 to accommodate the replacement of vapor-phase granular activated carbon (VPGAC) in both supplemental beds.

Regional Groundwater Monitoring & Outpost Well Monitoring

- Initiated and completed Fourth 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 Third 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 Third and Fourth Quarter 2021 sampling events are provided in Table 1. Purge water is planned for discharged to the Nassau County Department of Public Works (NCDPW) sewer system, as authorized by NCDPW, in early January 2022.

Northrop Grumman Cooperation with Navy

- Coordinated with Navy and completed Fourth Quarter 2021 sampling of additional outpost wells (BPOW5 and BPOW6 clusters) and select plume monitoring (RE-designated and TT102 well clusters), as highlighted on Figure 1.
- Prepared and submitted to Navy for distribution, the Third 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.
- Prepared and submitted to Navy for distribution, the Form 1 data for the Fourth Quarter 2021 sampling event associated with Navy-owned wells.

Other

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

Mr. Jason Pelton
New York State Department of Environmental Conservation
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OU2 ACTIVITIES SCHEDULED FOR FIRST QUARTER 2022

OU2 ONCT System

- Continue OM&M of the OU2 ONCT system.
- Conduct routine First Quarter 2022 ONCT system sampling.

Regional Groundwater Monitoring & Outpost Well Monitoring

- Conduct First Quarter 2022 sampling from wells in Northrop Grumman's routine monitoring program (BPOW2 cluster and GM-21D2).

Northrop Grumman Cooperation with Navy

- Coordinate with Navy and conduct the First Quarter 2022 sampling associated with the additional outpost wells (BPOW5 and BPOW6 clusters).
- Prepare and submit to Navy for distribution, the Fourth Quarter 2021 sampling data (complete data packages, including analytical data table, laboratory reports, data validation reports, and Electronic Data Deliverables [EDDs]) for outpost wells (BPOW5 and BPOW6 clusters) and select monitoring wells (RE-designated and TT102 well clusters).

Other

- Prepare and submit the Fourth Quarter 2021 AOC Quarterly Progress Report.
- Prepare and submit the Annual 2021 OU2 OM&M Report (including Fourth Quarter 2021 monitoring and operational results).

Mr. Jason Pelton
New York State Department of Environmental Conservation
January 10, 2022

Sincerely,
Arcadis of New York, Inc.

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Attachments

Table 1	Summary of Analytical and Testing Data
Figure 1	Well Location Map

Tables

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

Constituents	Location ID: Sample ID: Date:	DISCHARGE [1] DISCHARGE110821BW1 11/8/2021	DISCHARGE [1] DISCHARGE110821BW2 11/8/2021	DISCHARGE [1] DISCHARGE111721PQ2 11/17/2021	DISCHARGE [1] DISCHARGE111721SV1 11/17/2021
Volatile Organic Compounds (units in µg/L)[2]					
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		< 2.0	< 2.0	< 2.0	< 2.0
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)		< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		**5.1**	< 5.0	< 5.0	**4.6 J**
Benzene		< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Carbon Disulfide		< 1.0	< 1.0	< 1.0	< 1.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
CFC-11		< 2.0	< 2.0	< 2.0	< 2.0
CFC-12		< 2.0	< 2.0	< 2.0	< 2.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
Methyl-tert-butylether		< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 2.0	< 2.0	< 2.0	< 2.0
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		**4.2**	**12.5**	< 1.0	**5.4**
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs[3]		**9.3**	**12.5**	ND	**10.0**
pH (standard units)[4]		**5.75**	**5.90**	**5.91**	**6.58**

Notes and Abbreviations:

(1) Samples collected from purge water generated as part of the Third and Fourth Quarter 2021 sampling events.

(2) Purge water discharge sample analysis by VOC Method 624.1. Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2016), or as received as final from the laboratory.

(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) pH field readings are within allowable range (5.5 to 9.5 standatd units) set forth by NCDPW Ordinance No. 266-1985 (June 1985).

<1.0	Constituent not detected at or above its laboratory quantification limit.
µg/L	Micrograms per liter
OU2	Operable Unit 2
VOC	Volatile Organic Compound
J	Indicates an estimated value
ND	Not detected

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\aschilling\ACCDocs\Arcadis\AUS-NORTHROP GRUMMAN-BETHPAGE-BETHPAGE New York\Project Files\2021\01-In Progress\01-DWG\OU2-GWMWN-A1.dwg LAYOUT: 1 SAVED: 9/29/2021 3:49 PM ACADVER: 24.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 9/29/2021 3:50 PM BY: SCHILLING, ADAM

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 N-10597 GM-16I GM-16SR MW-3-1 WELL 3R MW-1GF WELL 3 GM-17I GM-17SR GM-17D WELL 1 PLT1MW-05 PLT1MW-06 GM-15D2 GM-15D GM-15SR GM-15I GM-19S GM-19I PLT1MW-04 MW-2GF GM-18D GM-18I GM-18S GM-39DB GM-39DA GM-33D2 N-10631 GM-73D3 WELL 18 GM-73D GM-73D2 GM-74D3 GM-74D2 GM-74I GM-74D WELL 19 WELL 17 GM-20I GM-21D2 GM-21S GM-21I GM-21D GM-20D N-10633 RE106D2 GM-78D2 GM-78D RE106D1 GM-78S N-10600 RE106D3 GM-78I N-9921 CENTRAL AVENUE GM-79I GM-79S GM-79D RE107D1 RE107D2 RE107D3 N-10624 GM-75D2 N-10627 N-10634 RE109D1 RE109D2 RE109D3 GM-37D GM-37D2 GM-71D2 GM-70D2 GM-35D2 GM-36D GM-36D2 N-10821 GM-34D GM-34D2 GM-38D GM-38D2 MALLARD ROAD HEMPSTEAD TURNPIKE RE121D1 RE121D2 RE124D1 RE124D2 RE116D1 RE114D1 RE114D3 RE114D2 RE115D1 RE115D2 BPOW 4-2R BPOW 4-1R RE128D1 RE128D2 BPOW 2-2 BPOW 2-3 BPOW 2-1 BPOW 3-4 BPOW 3-3 BPOW 3-2 BPOW 3-1 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 1-2 BPOW 1-1 BPOW 1-3

OU2 MAIN FACILITY REMEDIAL SYSTEM (TOWER 96)
OU2 MAIN FACILITY REMEDIAL SYSTEM (TOWER 102)
EXISTING OU2 TREATMENT SYSTEMS
700 HICKSVILLE ROAD (FORMER PLANT 2)
100 GRUMMAN ROAD WEST
PLANT 1 FUEL DEPOT AREA
GRUMMAN ROAD
PLANT 3
PLANT 1
PLANT 25
PLANT 5
MTA BUILDING
HIGH SCHOOL

BLOOMINGDALE ROAD
(GARDINER'S AVENUE)
LOWLAND ROAD
RANCH LANE
NORTH WANTAGH AVE.
HICKSVILLE ROAD
STEWART AVENUE
BROADWAY
LONG ISLAND RAILROAD
SEAFORD - OYSTER BAY EXPRESSWAY
BETHPAGE STATE PARKWAY
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
BETHPAGE, NEW YORK

WELL LOCATION MAP

ARCADIS

FIGURE
1