

## Pelton, Jason M (DEC)

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**From:** Nemickas, Arnie <Arnas.Nemickas@arcadis.com>  
**Sent:** Thursday, September 17, 2020 3:49 PM  
**To:** Pelton, Jason M (DEC)  
**Cc:** edward.hannon@ngc.com; Hesler, Donald (DEC); Wolfert, Mike; Stern, David  
**Subject:** DELIVERABLE - Form1 Data - Northrop Grumman Bethpage - OU3 3Q-2020 ONCT Sampling  
**Attachments:** Form 1\_2020 OU3 Annual Groundwater.pdf

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Good afternoon Jason:

On behalf of Northrop Grumman, Arcadis is submitting the attached Form 1 data. As per discussions between Northrop Grumman and NYSDEC, NYSDEC requested that Northrop Grumman submit the validated Form 1s as soon as the information is available.

The attached Form 1's are for the OU3 ONCT system annual 2020 routine sampling event per the OU3 OM&M Manual.

Regards,

*Arnie*

**Arnas Nemickas, PG** | Certified Project Manager 1 / Hydrogeologist |  
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**Report of Analysis**

Client Sample ID: BCPMW4-2	Date Sampled: 07/20/20
Lab Sample ID: JD10414-1	Date Received: 07/21/20
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260C	
Project: Northrop Grumman, OU3 Hydro, Bethpage, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191420.D	1	07/23/20 12:50	EH	n/a	n/a	V2D8274
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	0.59	1.0	0.57	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	54.6	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: BCPMW4-2	Date Sampled: 07/20/20
Lab Sample ID: JD10414-1	Date Received: 07/21/20
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260C	
Project: Northrop Grumman, OU3 Hydro, Bethpage, NY	

VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	44.1	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	0.97	1.0	0.79	ug/l	J
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-2	<b>Date Sampled:</b> 07/20/20
<b>Lab Sample ID:</b> JD10414-1	<b>Date Received:</b> 07/21/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49044

(2) Prep QC Batch: MP22053

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RL = Reporting Limit

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-2	<b>Date Sampled:</b> 07/20/20
<b>Lab Sample ID:</b> JD10414-1F	<b>Date Received:</b> 07/21/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49044

(2) Prep QC Batch: MP22053

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RL = Reporting Limit

4.2  
4

# Report of Analysis

<b>Client Sample ID:</b> BCPMW4-1	
<b>Lab Sample ID:</b> JD10414-2	<b>Date Sampled:</b> 07/20/20
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/21/20
<b>Method:</b> SW846 8260C	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191421.D	1	07/23/20 13:21	EH	n/a	n/a	V2D8274
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

### VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	6.2	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	96.7	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.3  
 4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-1 <b>Lab Sample ID:</b> JD10414-2 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/20/20 <b>Date Received:</b> 07/21/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	1.4	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	32.9	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	5.6	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-1	<b>Date Sampled:</b> 07/20/20
<b>Lab Sample ID:</b> JD10414-2	<b>Date Received:</b> 07/21/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	30.3	10	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49044

(2) Prep QC Batch: MP22053

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RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-1	<b>Date Sampled:</b> 07/20/20
<b>Lab Sample ID:</b> JD10414-2F	<b>Date Received:</b> 07/21/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	27.6	10	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49044

(2) Prep QC Batch: MP22053

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RL = Reporting Limit

4.4  
4

## Report of Analysis

<b>Client Sample ID:</b> FB072020ALH1 <b>Lab Sample ID:</b> JD10414-3 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/20/20 <b>Date Received:</b> 07/21/20 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191502.D	1	07/27/20 16:35	EH	n/a	n/a	V2D8277
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	11.3	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> FB072020ALH1 <b>Lab Sample ID:</b> JD10414-3 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/20/20 <b>Date Received:</b> 07/21/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
1066-40-6	Silanol, trimethyl-	8.93	13	ug/l	JN
	Total TIC, Volatile		13	ug/l	J

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> FB072020ALH1	<b>Date Sampled:</b> 07/20/20
<b>Lab Sample ID:</b> JD10414-3	<b>Date Received:</b> 07/21/20
<b>Matrix:</b> AQ - Field Blank Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/24/20	07/25/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49044

(2) Prep QC Batch: MP22053

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	TB072020ALH1	Date Sampled:	07/20/20
Lab Sample ID:	JD10414-4	Date Received:	07/21/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191523.D	1	07/28/20 19:37	EH	n/a	n/a	V2D8278
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID: TB072020ALH1		Date Sampled: 07/20/20
Lab Sample ID: JD10414-4		Date Received: 07/21/20
Matrix: AQ - Trip Blank Water		Percent Solids: n/a
Method: SW846 8260C		
Project: Northrop Grumman, OU3 Hydro, Bethpage, NY		

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.6  
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## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN6001-1  
**Client ID:** BCPMW4-2  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN6001  
**Lab File ID:** G1819.D

**Sample Date:** 20-JUL-20  
**Received Date:** 21-JUL-20  
**Extract Date:** 21-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282354

**Analysis Date:** 22-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 27-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		10	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		65.2	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN6001-2DL  
**Client ID:** BCPMW4-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN6001  
**Lab File ID:** G1823.D

**Sample Date:** 20-JUL-20  
**Received Date:** 21-JUL-20  
**Extract Date:** 21-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282354

**Analysis Date:** 24-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 27-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		31	ug/L	3	.25	0.70	0.24
1,4-Dioxane-D8		72.6	%				



## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN6001-3  
**Client ID:** FB072020ALH1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN6001  
**Lab File ID:** G1821.D

**Sample Date:** 20-JUL-20  
**Received Date:** 21-JUL-20  
**Extract Date:** 21-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282354

**Analysis Date:** 22-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 27-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.25	ug/L	1	.25	0.25	0.085
1,4-Dioxane-D8		64.2	%				

## Report of Analysis

Client Sample ID:	BCPMW6-2	Date Sampled:	07/13/20
Lab Sample ID:	JD10004-1	Date Received:	07/13/20
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34928.D	1	07/17/20 18:16	ED	n/a	n/a	V4V1390
Run #2	2B177535.D	1	07/21/20 00:10	BK	n/a	n/a	V2B8063

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone <sup>a</sup>	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>b</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> BCPMW6-2 <b>Lab Sample ID:</b> JD10004-1 <b>Matrix:</b> AQ - Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/13/20 <b>Date Received:</b> 07/13/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	107%	103%	81-124%
2037-26-5	Toluene-D8	106%	103%	80-120%
460-00-4	4-Bromofluorobenzene	99%	98%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	<b>Total TIC, Volatile</b>		<b>0</b>	<b>ug/l</b>	

- (a) Associated CCV outside of control limits high, sample was ND.
- (b) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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## Report of Analysis

<b>Client Sample ID:</b> BCPMW6-2	<b>Date Sampled:</b> 07/13/20
<b>Lab Sample ID:</b> JD10004-1	<b>Date Received:</b> 07/13/20
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	19.8	10	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48983

(2) Prep QC Batch: MP21886

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BCPMW6-2	<b>Date Sampled:</b> 07/13/20
<b>Lab Sample ID:</b> JD10004-1F	<b>Date Received:</b> 07/13/20
<b>Matrix:</b> AQ - Water Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48983

(2) Prep QC Batch: MP21886

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	BCPMW6-1	Date Sampled:	07/13/20
Lab Sample ID:	JD10004-2	Date Received:	07/13/20
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34929.D	1	07/17/20 18:45	ED	n/a	n/a	V4V1390
Run #2	2B177536.D	1	07/21/20 00:40	BK	n/a	n/a	V2B8063

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone <sup>a</sup>	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	3.0 <sup>b</sup>	5.0	2.9	ug/l	J
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> BCPMW6-1 <b>Lab Sample ID:</b> JD10004-2 <b>Matrix:</b> AQ - Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/13/20 <b>Date Received:</b> 07/13/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%	103%	80-120%
17060-07-0	1,2-Dichloroethane-D4	104%	103%	81-124%
2037-26-5	Toluene-D8	105%	102%	80-120%
460-00-4	4-Bromofluorobenzene	103%	99%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	<b>Total TIC, Volatile</b>		<b>0</b>	<b>ug/l</b>	

- (a) Associated CCV outside of control limits high, sample was ND.
- (b) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW6-1	<b>Date Sampled:</b> 07/13/20
<b>Lab Sample ID:</b> JD10004-2	<b>Date Received:</b> 07/13/20
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48983

(2) Prep QC Batch: MP21886

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RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> BCPMW6-1	<b>Date Sampled:</b> 07/13/20
<b>Lab Sample ID:</b> JD10004-2F	<b>Date Received:</b> 07/13/20
<b>Matrix:</b> AQ - Water Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48983

(2) Prep QC Batch: MP21886

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	TB071320ARH1	Date Sampled:	07/13/20
Lab Sample ID:	JD10004-3	Date Received:	07/13/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34922.D	1	07/17/20 15:23	ED	n/a	n/a	V4V1390
Run #2	2B177532.D	1	07/20/20 22:41	BK	n/a	n/a	V2B8063

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone <sup>a</sup>	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>b</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB071320ARH1 <b>Lab Sample ID:</b> JD10004-3 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/13/20 <b>Date Received:</b> 07/13/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%	101%	80-120%
17060-07-0	1,2-Dichloroethane-D4	106%	102%	81-124%
2037-26-5	Toluene-D8	107%	103%	80-120%
460-00-4	4-Bromofluorobenzene	98%	98%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	<b>Total TIC, Volatile</b>		<b>0</b>	<b>ug/l</b>	

- (a) Associated CCV outside of control limits high, sample was ND.
- (b) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
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## Report of Analysis

Client Sample ID:	TB071320MW1	Date Sampled:	07/13/20
Lab Sample ID:	JD10004-4	Date Received:	07/13/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34923.D	1	07/17/20 15:52	ED	n/a	n/a	V4V1390
Run #2	2B177533.D	1	07/20/20 23:11	BK	n/a	n/a	V2B8063

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone <sup>a</sup>	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>b</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB071320MW1 <b>Lab Sample ID:</b> JD10004-4 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/13/20 <b>Date Received:</b> 07/13/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%	103%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	102%	81-124%
2037-26-5	Toluene-D8	110%	102%	80-120%
460-00-4	4-Bromofluorobenzene	100%	98%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	<b>Total TIC, Volatile</b>		<b>0</b>	<b>ug/l</b>	

- (a) Associated CCV outside of control limits high, sample was ND.
- (b) Result is from Run# 2

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ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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## Report of Analysis

Client Sample ID:	FB071320MW1	Date Sampled:	07/13/20
Lab Sample ID:	JD10004-5	Date Received:	07/13/20
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34924.D	1	07/17/20 16:21	ED	n/a	n/a	V4V1390
Run #2	2B177534.D	1	07/20/20 23:41	BK	n/a	n/a	V2B8063

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone <sup>a</sup>	12.2	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>b</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FB071320MW1 <b>Lab Sample ID:</b> JD10004-5 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/13/20 <b>Date Received:</b> 07/13/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	104%	103%	81-124%
2037-26-5	Toluene-D8	99%	102%	80-120%
460-00-4	4-Bromofluorobenzene	104%	98%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	<b>Total TIC, Volatile</b>		<b>0</b>	<b>ug/l</b>	

- (a) Associated CCV outside of control limits high.
- (b) Result is from Run# 2

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ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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## Report of Analysis

<b>Client Sample ID:</b> FB071320MW1	<b>Date Sampled:</b> 07/13/20
<b>Lab Sample ID:</b> JD10004-5	<b>Date Received:</b> 07/13/20
<b>Matrix:</b> AQ - Field Blank Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/14/20	07/16/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48983

(2) Prep QC Batch: MP21886

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RL = Reporting Limit

4.7  
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## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5720-1  
**Client ID:** BCPMW6-2  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5720  
**Lab File ID:** G1788.D

**Sample Date:** 13-JUL-20  
**Received Date:** 14-JUL-20  
**Extract Date:** 16-JUL-20  
**Extracted By:** KC/MP  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282041

**Analysis Date:** 20-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 21-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	J	0.16	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		66.7	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5720-2RE  
**Client ID:** BCPMW6-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5720  
**Lab File ID:** G1800.D

**Sample Date:** 13-JUL-20  
**Received Date:** 14-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 21-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.23	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		68.3	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5720-3  
**Client ID:** FB071320MW1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5720  
**Lab File ID:** G1790.D

**Sample Date:** 13-JUL-20  
**Received Date:** 14-JUL-20  
**Extract Date:** 16-JUL-20  
**Extracted By:** KC/MP  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282041

**Analysis Date:** 20-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.26	ug/L	1	.25	0.26	0.088
1,4-Dioxane-D8		66.7	%				

## Report of Analysis

<b>Client Sample ID:</b> BCPMW7-1 <b>Lab Sample ID:</b> JD9878-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/09/20 <b>Date Received:</b> 07/09/20 <b>Percent Solids:</b> n/a
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Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2D191261.D	1	07/16/20 20:27	EH	n/a	n/a	V2D8265

Run #1	Purge Volume
Run #2	5.0 ml

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> BCPMW7-1 <b>Lab Sample ID:</b> JD9878-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/09/20 <b>Date Received:</b> 07/09/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW7-1	<b>Date Sampled:</b> 07/09/20
<b>Lab Sample ID:</b> JD9878-1	<b>Date Received:</b> 07/09/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/15/20 ND	SW846 6010D <sup>2</sup>	SW846 3010A <sup>3</sup>
Chromium	11.6	10	ug/l	1	07/14/20	07/14/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>3</sup>

(1) Instrument QC Batch: MA48969

(2) Instrument QC Batch: MA48983

(3) Prep QC Batch: MP21884

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RL = Reporting Limit

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW7-1	<b>Date Sampled:</b> 07/09/20
<b>Lab Sample ID:</b> JD9878-1F	<b>Date Received:</b> 07/09/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/15/20 ND	SW846 6010D <sup>2</sup>	SW846 3010A <sup>3</sup>
Chromium	< 10	10	ug/l	1	07/14/20	07/14/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>3</sup>

(1) Instrument QC Batch: MA48969

(2) Instrument QC Batch: MA48983

(3) Prep QC Batch: MP21884

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RL = Reporting Limit

4.2  
4

# Report of Analysis

<b>Client Sample ID:</b> TB070920ALH1	
<b>Lab Sample ID:</b> JD9878-2	<b>Date Sampled:</b> 07/09/20
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/09/20
<b>Method:</b> SW846 8260C	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191256.D	1	07/16/20 17:58	EH	n/a	n/a	V2D8265
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.3  
4



## Report of Analysis

<b>Client Sample ID:</b> TB070920ALH1	<b>Date Sampled:</b> 07/09/20
<b>Lab Sample ID:</b> JD9878-2	<b>Date Received:</b> 07/09/20
<b>Matrix:</b> AQ - Trip Blank Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260C	
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		81-124%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> B24MW-3 <b>Lab Sample ID:</b> JD9878-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/09/20 <b>Date Received:</b> 07/09/20 <b>Percent Solids:</b> n/a
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Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2D191262.D	1	07/16/20 20:57	EH	n/a	n/a	V2D8265

Run #1	Purge Volume
Run #2	5.0 ml

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.4  
4

## Report of Analysis

<b>Client Sample ID:</b> B24MW-3 <b>Lab Sample ID:</b> JD9878-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/09/20 <b>Date Received:</b> 07/09/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.4  
4

## Report of Analysis

<b>Client Sample ID:</b> FB070920ALH1 <b>Lab Sample ID:</b> JD9878-4 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/09/20 <b>Date Received:</b> 07/09/20 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191255.D	1	07/16/20 17:28	EH	n/a	n/a	V2D8265
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> FB070920ALH1 <b>Lab Sample ID:</b> JD9878-4 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/09/20 <b>Date Received:</b> 07/09/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> FB070920ALH1	<b>Date Sampled:</b> 07/09/20
<b>Lab Sample ID:</b> JD9878-4	<b>Date Received:</b> 07/09/20
<b>Matrix:</b> AQ - Field Blank Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/14/20	07/15/20 ND	SW846 6010D <sup>2</sup>	SW846 3010A <sup>3</sup>
Chromium	< 10	10	ug/l	1	07/14/20	07/14/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>3</sup>

(1) Instrument QC Batch: MA48969

(2) Instrument QC Batch: MA48983

(3) Prep QC Batch: MP21884

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RL = Reporting Limit

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5611-1  
**Client ID:** BCPMW7-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5611  
**Lab File ID:** G1782.D

**Sample Date:** 09-JUL-20  
**Received Date:** 10-JUL-20  
**Extract Date:** 13-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG281795

**Analysis Date:** 15-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 15-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.24	ug/L	1	.25	0.24	0.082
1,4-Dioxane-D8		58.9	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5611-2  
**Client ID:** B24MW-3  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5611  
**Lab File ID:** G1783.D

**Sample Date:** 09-JUL-20  
**Received Date:** 10-JUL-20  
**Extract Date:** 13-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG281795

**Analysis Date:** 15-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 15-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.31	ug/L	1	.25	0.24	0.081
1,4-Dioxane-D8		63.2	%				



## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5611-3  
**Client ID:** FB070920ALH1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5611  
**Lab File ID:** G1784.D

**Sample Date:** 09-JUL-20  
**Received Date:** 10-JUL-20  
**Extract Date:** 13-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG281795

**Analysis Date:** 15-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 15-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.26	ug/L	1	.25	0.26	0.088
1,4-Dioxane-D8		56.5	%				

Report of Analysis

Client Sample ID: MW-205-1	Date Sampled: 07/14/20
Lab Sample ID: JD10084-1	Date Received: 07/14/20
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260C	
Project: Northrop Grumman, OU3 Hydro, Bethpage, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191294.D	1	07/17/20 19:40	EH	n/a	n/a	V2D8267
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-205-1 <b>Lab Sample ID:</b> JD10084-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/14/20 <b>Date Received:</b> 07/14/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-205-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-1	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>3</sup>
Chromium	242	10	ug/l	1	07/16/20	07/20/20 ND	SW846 6010D <sup>2</sup>	SW846 3010A <sup>3</sup>

(1) Instrument QC Batch: MA48990

(2) Instrument QC Batch: MA49009

(3) Prep QC Batch: MP21921

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> MW-205-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-1F	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	80.0	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

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RL = Reporting Limit

## Report of Analysis

Client Sample ID: MW-201-1		Date Sampled: 07/14/20
Lab Sample ID: JD10084-2		Date Received: 07/14/20
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8260C		
Project: Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2D191295.D	1	07/17/20 20:12	EH	n/a	n/a	V2D8267

Run #1	Purge Volume
Run #2	5.0 ml

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	0.60	1.0	0.51	ug/l	J
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-201-1 <b>Lab Sample ID:</b> JD10084-2 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/14/20 <b>Date Received:</b> 07/14/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-201-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-2	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	18.0	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

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RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> MW-201-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-2F	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

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RL = Reporting Limit

4.4  
4

# Report of Analysis

<b>Client Sample ID:</b> MW-200-1		
<b>Lab Sample ID:</b> JD10084-3		<b>Date Sampled:</b> 07/14/20
<b>Matrix:</b> AQ - Ground Water		<b>Date Received:</b> 07/14/20
<b>Method:</b> SW846 8260C		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191296.D	1	07/17/20 20:43	EH	n/a	n/a	V2D8267
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-200-1 <b>Lab Sample ID:</b> JD10084-3 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/14/20 <b>Date Received:</b> 07/14/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-200-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-3	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	15.4	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

---

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> MW-200-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-3F	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

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RL = Reporting Limit

## Report of Analysis

Client Sample ID: MW-204-1		Date Sampled: 07/14/20
Lab Sample ID: JD10084-4		Date Received: 07/14/20
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8260C		
Project: Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2D191291.D	1	07/17/20 18:06	EH	n/a	n/a	V2D8267

Run #1	Purge Volume
Run #2	5.0 ml

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	1.0	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-204-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-4	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260C	
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	1.7	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-204-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-4	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	18.9	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

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RL = Reporting Limit

4.7  
4



## Report of Analysis

<b>Client Sample ID:</b> MW-204-1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-4F	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

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RL = Reporting Limit

# Report of Analysis

<b>Client Sample ID:</b> TB071420MW1	
<b>Lab Sample ID:</b> JD10084-5	<b>Date Sampled:</b> 07/14/20
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/14/20
<b>Method:</b> SW846 8260C	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191290.D	1	07/17/20 17:35	EH	n/a	n/a	V2D8267
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.9  
4

## Report of Analysis

<b>Client Sample ID:</b> TB071420MW1 <b>Lab Sample ID:</b> JD10084-5 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/14/20 <b>Date Received:</b> 07/14/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
1066-40-6	Silanol, trimethyl-	8.91	5.5	ug/l	JN
	Total TIC, Volatile		5.5	ug/l	J

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.9  
4

# Report of Analysis

<b>Client Sample ID:</b> FB071420MW1		
<b>Lab Sample ID:</b> JD10084-6		<b>Date Sampled:</b> 07/14/20
<b>Matrix:</b> AQ - Field Blank Water		<b>Date Received:</b> 07/14/20
<b>Method:</b> SW846 8260C		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191388.D	1	07/22/20 11:55	EH	n/a	n/a	V2D8272
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone <sup>a</sup>	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.10  
4

## Report of Analysis

<b>Client Sample ID:</b> FB071420MW1 <b>Lab Sample ID:</b> JD10084-6 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/14/20 <b>Date Received:</b> 07/14/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.10  
4

## Report of Analysis

<b>Client Sample ID:</b> FB071420MW1	<b>Date Sampled:</b> 07/14/20
<b>Lab Sample ID:</b> JD10084-6	<b>Date Received:</b> 07/14/20
<b>Matrix:</b> AQ - Field Blank Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

4.10  
4

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA48990

(2) Prep QC Batch: MP21921

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RL = Reporting Limit

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5770-1  
**Client ID:** MW-205-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5770  
**Lab File ID:** G1791.D

**Sample Date:** 14-JUL-20  
**Received Date:** 15-JUL-20  
**Extract Date:** 16-JUL-20  
**Extracted By:** KC/MP  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282041

**Analysis Date:** 20-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 21-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.30	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		70.3	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5770-2  
**Client ID:** MW-201-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5770  
**Lab File ID:** G1792.D

**Sample Date:** 14-JUL-20  
**Received Date:** 15-JUL-20  
**Extract Date:** 16-JUL-20  
**Extracted By:** KC/MP  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282041

**Analysis Date:** 20-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 21-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.47	ug/L	1	.25	0.24	0.080
1,4-Dioxane-D8		64.5	%				



## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5770-3  
**Client ID:** MW-200-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5770  
**Lab File ID:** G1793.D

**Sample Date:** 14-JUL-20  
**Received Date:** 15-JUL-20  
**Extract Date:** 16-JUL-20  
**Extracted By:** KC/MP  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282041

**Analysis Date:** 20-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 21-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.35	ug/L	1	.25	0.24	0.080
1,4-Dioxane-D8		70.9	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5770-4  
**Client ID:** MW-204-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5770  
**Lab File ID:** G1794.D

**Sample Date:** 14-JUL-20  
**Received Date:** 15-JUL-20  
**Extract Date:** 16-JUL-20  
**Extracted By:** KC/MP  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282041

**Analysis Date:** 20-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 20-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.23	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		66.0	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5770-5  
**Client ID:** FB071420MW1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5770  
**Lab File ID:** G1795.D

**Sample Date:** 14-JUL-20  
**Received Date:** 15-JUL-20  
**Extract Date:** 16-JUL-20  
**Extracted By:** KC/MP  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282041

**Analysis Date:** 20-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 20-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.26	ug/L	1	.25	0.26	0.088
1,4-Dioxane-D8		63.2	%				

## Report of Analysis

Client Sample ID:	MW-206-1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-1	Date Received:	07/17/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191376.D	1	07/21/20 18:56	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	0.58	1.0	0.57	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-206-1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-1	Date Received:	07/17/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	1.3	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	0.75	1.0	0.53	ug/l	J
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> MW-206-1		<b>Date Sampled:</b> 07/17/20
<b>Lab Sample ID:</b> JD10310-1		<b>Date Received:</b> 07/17/20
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

**Total Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/24/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	24.7	10	ug/l	1	07/21/20	07/24/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49031

(2) Prep QC Batch: MP21991

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> MW-206-1		<b>Date Sampled:</b> 07/17/20
<b>Lab Sample ID:</b> JD10310-1F		<b>Date Received:</b> 07/17/20
<b>Matrix:</b> AQ - Groundwater Filtered		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/24/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/21/20	07/24/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49031

(2) Prep QC Batch: MP21991

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	MW-202-1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-2	Date Received:	07/17/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191377.D	1	07/21/20 19:27	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



## Report of Analysis

Client Sample ID:	MW-202-1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-2	Date Received:	07/17/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> MW-202-1		<b>Date Sampled:</b> 07/17/20
<b>Lab Sample ID:</b> JD10310-2		<b>Date Received:</b> 07/17/20
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

**Total Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/24/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>3</sup>
Chromium	71.4	10	ug/l	1	07/21/20	07/28/20 ND	SW846 6010D <sup>2</sup>	SW846 3010A <sup>3</sup>

- (1) Instrument QC Batch: MA49031
- (2) Instrument QC Batch: MA49063
- (3) Prep QC Batch: MP21991

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> MW-202-1		<b>Date Sampled:</b> 07/17/20
<b>Lab Sample ID:</b> JD10310-2F		<b>Date Received:</b> 07/17/20
<b>Matrix:</b> AQ - Groundwater Filtered		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/24/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	13.2	10	ug/l	1	07/21/20	07/24/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49031

(2) Prep QC Batch: MP21991

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	DISCHARGE_071720	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-3	Date Received:	07/17/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 624.1		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	N282584.D	1	07/29/20 11:57	CSF	n/a	n/a	VN11968
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 Discharge List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	3.0	ug/l	
71-43-2	Benzene	ND	1.0	0.34	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.35	ug/l	
75-25-2	Bromoform	ND	1.0	0.60	ug/l	
74-83-9	Bromomethane	ND	1.0	0.87	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.52	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.33	ug/l	
75-00-3	Chloroethane	ND	1.0	0.54	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.78	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.43	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	0.64	1.0	0.42	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.46	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.42	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
76-13-1	Freon 113	ND	2.0	0.87	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.87	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	1.0	0.41	ug/l	
100-42-5	Styrene	ND	2.0	0.34	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.32	ug/l	
127-18-4	Tetrachloroethene	1.1	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.36	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	DISCHARGE_071720	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-3	Date Received:	07/17/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 624.1		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 Discharge List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.41	ug/l	
79-01-6	Trichloroethene	0.77	1.0	0.43	ug/l	J
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.76	ug/l	
95-47-6	o-Xylene	ND	1.0	0.35	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	103%		76-122%
2037-26-5	Toluene-D8 (SUR)	102%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	97%		80-120%
1868-53-7	Dibromofluoromethane (S)	110%		80-120%

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	FB071720ALH1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-4	Date Received:	07/17/20
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191374.D	1	07/21/20 17:54	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	FB071720ALH1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-4	Date Received:	07/17/20
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FB071720ALH1		<b>Date Sampled:</b> 07/17/20
<b>Lab Sample ID:</b> JD10310-4		<b>Date Received:</b> 07/17/20
<b>Matrix:</b> AQ - Field Blank Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

**Total Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49031

(2) Prep QC Batch: MP21991

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RL = Reporting Limit



## Report of Analysis

Client Sample ID:	TB071720ALH1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-5	Date Received:	07/17/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191375.D	1	07/21/20 18:25	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB071720ALH1	Date Sampled:	07/17/20
Lab Sample ID:	JD10310-5	Date Received:	07/17/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5968-1  
**Client ID:** MW-206-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5968  
**Lab File ID:** G1816.D

**Sample Date:** 17-JUL-20  
**Received Date:** 20-JUL-20  
**Extract Date:** 21-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282354

**Analysis Date:** 22-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 23-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.59	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		90.4	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5968-2  
**Client ID:** MW-202-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5968  
**Lab File ID:** G1817.D

**Sample Date:** 17-JUL-20  
**Received Date:** 20-JUL-20  
**Extract Date:** 21-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282354

**Analysis Date:** 22-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 23-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.24	ug/L	1	.25	0.24	0.081
1,4-Dioxane-D8		93.5	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5968-3  
**Client ID:** FB071720ALH1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5968  
**Lab File ID:** G1818.D

**Sample Date:** 17-JUL-20  
**Received Date:** 20-JUL-20  
**Extract Date:** 21-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282354

**Analysis Date:** 22-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 23-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.25	ug/L	1	.25	0.25	0.086
1,4-Dioxane-D8		97.6	%				

## Report of Analysis

Client Sample ID:	TB071520ARH1	Date Sampled:	07/15/20
Lab Sample ID:	JD10166-1	Date Received:	07/15/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34925.D	1	07/17/20 16:50	ED	n/a	n/a	V4V1390
Run #2	3D156754.D	1	07/27/20 12:13	EH	n/a	n/a	V3D6696

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND <sup>a</sup>	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>a</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB071520ARH1 <b>Lab Sample ID:</b> JD10166-1 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/15/20 <b>Date Received:</b> 07/15/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%	107%	80-120%
17060-07-0	1,2-Dichloroethane-D4	107%	105%	81-124%
2037-26-5	Toluene-D8	104%	101%	80-120%
460-00-4	4-Bromofluorobenzene	102%	102%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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## Report of Analysis

Client Sample ID:	MW-208-1	Date Sampled:	07/15/20
Lab Sample ID:	JD10166-2	Date Received:	07/15/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34930.D	1	07/17/20 19:14	ED	n/a	n/a	V4V1390
Run #2	3D156757.D	1	07/27/20 13:28	EH	n/a	n/a	V3D6696

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND <sup>a</sup>	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>a</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	44.6	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> MW-208-1		<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-2		<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260C		
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

### VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	4.5	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%	109%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	105%	81-124%
2037-26-5	Toluene-D8	100%	101%	80-120%
460-00-4	4-Bromofluorobenzene	101%	102%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> MW-208-1	<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-2	<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49003

(2) Prep QC Batch: MP21938

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> MW-208-1	<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-2F	<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49003

(2) Prep QC Batch: MP21938

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	TB071520MW1	Date Sampled:	07/15/20
Lab Sample ID:	JD10166-3	Date Received:	07/15/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34926.D	1	07/17/20 17:18	ED	n/a	n/a	V4V1390
Run #2	3D156755.D	1	07/27/20 12:38	EH	n/a	n/a	V3D6696

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND <sup>a</sup>	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>a</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> TB071520MW1 <b>Lab Sample ID:</b> JD10166-3 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/15/20 <b>Date Received:</b> 07/15/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%	105%	80-120%
17060-07-0	1,2-Dichloroethane-D4	103%	104%	81-124%
2037-26-5	Toluene-D8	102%	102%	80-120%
460-00-4	4-Bromofluorobenzene	105%	102%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.4  
4

# Report of Analysis

<b>Client Sample ID:</b> MW-203-1		
<b>Lab Sample ID:</b> JD10166-4		<b>Date Sampled:</b> 07/15/20
<b>Matrix:</b> AQ - Ground Water		<b>Date Received:</b> 07/15/20
<b>Method:</b> SW846 8260C		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34914.D	1	07/17/20 11:34	ED	n/a	n/a	V4V1390
Run #2	3D156753.D	1	07/27/20 11:48	EH	n/a	n/a	V3D6696

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND <sup>a</sup>	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>a</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
 4

## Report of Analysis

<b>Client Sample ID:</b> MW-203-1 <b>Lab Sample ID:</b> JD10166-4 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/15/20 <b>Date Received:</b> 07/15/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	3.2	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%	103%	80-120%
17060-07-0	1,2-Dichloroethane-D4	104%	103%	81-124%
2037-26-5	Toluene-D8	111%	102%	80-120%
460-00-4	4-Bromofluorobenzene	102%	102%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> MW-203-1	<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-4	<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	13.1	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49003

(2) Prep QC Batch: MP21938

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RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> MW-203-1	<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-4F	<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/17/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49003

(2) Prep QC Batch: MP21938

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	REP071520SV1	Date Sampled:	07/15/20
Lab Sample ID:	JD10166-5	Date Received:	07/15/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34931.D	1	07/17/20 19:43	ED	n/a	n/a	V4V1390
Run #2	3D156758.D	1	07/27/20 13:53	EH	n/a	n/a	V3D6696

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND <sup>a</sup>	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>a</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	44.4	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

### Report of Analysis

<b>Client Sample ID:</b> REP071520SV1	
<b>Lab Sample ID:</b> JD10166-5	<b>Date Sampled:</b> 07/15/20
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 07/15/20
<b>Method:</b> SW846 8260C	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	4.5	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%	109%	80-120%
17060-07-0	1,2-Dichloroethane-D4	104%	107%	81-124%
2037-26-5	Toluene-D8	100%	101%	80-120%
460-00-4	4-Bromofluorobenzene	105%	102%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> REP071520SV1	<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-5	<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49003

(2) Prep QC Batch: MP21938

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RL = Reporting Limit

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> REP071520SV1	<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-5F	<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49003

(2) Prep QC Batch: MP21938

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	FB071520SV1	Date Sampled:	07/15/20
Lab Sample ID:	JD10166-6	Date Received:	07/15/20
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4V34927.D	1	07/17/20 17:47	ED	n/a	n/a	V4V1390
Run #2	3D156756.D	1	07/27/20 13:03	EH	n/a	n/a	V3D6696

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	13.4 <sup>a</sup>	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND <sup>a</sup>	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FB071520SV1 <b>Lab Sample ID:</b> JD10166-6 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/15/20 <b>Date Received:</b> 07/15/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%	110%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	107%	81-124%
2037-26-5	Toluene-D8	101%	100%	80-120%
460-00-4	4-Bromofluorobenzene	103%	100%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	<b>Total TIC, Volatile</b>		<b>0</b>	<b>ug/l</b>	

(a) Result is from Run# 2

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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## Report of Analysis

<b>Client Sample ID:</b> FB071520SV1	<b>Date Sampled:</b> 07/15/20
<b>Lab Sample ID:</b> JD10166-6	<b>Date Received:</b> 07/15/20
<b>Matrix:</b> AQ - Field Blank Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/16/20	07/18/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49003

(2) Prep QC Batch: MP21938

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RL = Reporting Limit



## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5833-1  
**Client ID:** FB071520SV1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5833  
**Lab File ID:** G1801.D

**Sample Date:** 15-JUL-20  
**Received Date:** 16-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.25	ug/L	1	.25	0.25	0.084
1,4-Dioxane-D8		66.4	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5833-2  
**Client ID:** MW-208-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5833  
**Lab File ID:** G1802.D

**Sample Date:** 15-JUL-20  
**Received Date:** 16-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.40	ug/L	1	.25	0.24	0.080
1,4-Dioxane-D8		66.6	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5833-3  
**Client ID:** MW-203-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5833  
**Lab File ID:** G1803.D

**Sample Date:** 15-JUL-20  
**Received Date:** 16-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.27	ug/L	1	.25	0.24	0.080
1,4-Dioxane-D8		77.6	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5833-4  
**Client ID:** REP071520SV1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5833  
**Lab File ID:** G1806.D

**Sample Date:** 15-JUL-20  
**Received Date:** 16-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.41	ug/L	1	.25	0.25	0.085
1,4-Dioxane-D8		64.3	%				

## Report of Analysis

Client Sample ID:	TB071620MW1	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-1	Date Received:	07/16/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191372.D	1	07/21/20 16:52	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	TB071620MW1	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-1	Date Received:	07/16/20
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
1066-40-6	Silanol, trimethyl-	8.92	7.3	ug/l	JN
	Total TIC, Volatile		7.3	ug/l	J

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-207B-IR	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-2	Date Received:	07/16/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191418.D	1	07/23/20 11:48	EH	n/a	n/a	V2D8274
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-207B-IR	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-2	Date Received:	07/16/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	0.69	1.0	0.53	ug/l	J
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> MW-207B-IR		<b>Date Sampled:</b> 07/16/20
<b>Lab Sample ID:</b> JD10306-2		<b>Date Received:</b> 07/16/20
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

**Total Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	215	10	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP21993

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> MW-207B-IR		<b>Date Sampled:</b> 07/16/20
<b>Lab Sample ID:</b> JD10306-2F		<b>Date Received:</b> 07/16/20
<b>Matrix:</b> AQ - Groundwater Filtered		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP21993

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	MW-207A-1R	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-3	Date Received:	07/16/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191378.D	1	07/21/20 19:58	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	MW-207A-1R	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-3	Date Received:	07/16/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> MW-207A-1R		<b>Date Sampled:</b> 07/16/20
<b>Lab Sample ID:</b> JD10306-3		<b>Date Received:</b> 07/16/20
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

**Total Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP21993

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> MW-207A-1R		<b>Date Sampled:</b> 07/16/20
<b>Lab Sample ID:</b> JD10306-3F		<b>Date Received:</b> 07/16/20
<b>Matrix:</b> AQ - Groundwater Filtered		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP21993

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	FB071620MW1	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-4	Date Received:	07/16/20
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191373.D	1	07/21/20 17:23	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	7.3	10	6.0	ug/l	J
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	FB071620MW1	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-4	Date Received:	07/16/20
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> FB071620MW1		<b>Date Sampled:</b> 07/16/20
<b>Lab Sample ID:</b> JD10306-4		<b>Date Received:</b> 07/16/20
<b>Matrix:</b> AQ - Field Blank Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

**Total Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/21/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP21993

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	B24MW-2	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-5	Date Received:	07/16/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191379.D	1	07/21/20 20:28	EH	n/a	n/a	V2D8271
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID:	B24MW-2	Date Sampled:	07/16/20
Lab Sample ID:	JD10306-5	Date Received:	07/16/20
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	6.1	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5888-1  
**Client ID:** MW-207B-1R  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5888  
**Lab File ID:** G1807.D

**Sample Date:** 16-JUL-20  
**Received Date:** 17-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.87	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		65.9	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5888-2  
**Client ID:** MW-207A-1R  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5888  
**Lab File ID:** G1808.D

**Sample Date:** 16-JUL-20  
**Received Date:** 17-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.45	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		66.9	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5888-3  
**Client ID:** FB071620MW1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5888  
**Lab File ID:** G1809.D

**Sample Date:** 16-JUL-20  
**Received Date:** 17-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.24	ug/L	1	.25	0.24	0.080
1,4-Dioxane-D8		68.8	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN5888-4  
**Client ID:** B24MW-2  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN5888  
**Lab File ID:** G1810.D

**Sample Date:** 16-JUL-20  
**Received Date:** 17-JUL-20  
**Extract Date:** 20-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282291

**Analysis Date:** 21-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 22-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.91	ug/L	1	.25	0.23	0.079
1,4-Dioxane-D8		67.5	%				

### Report of Analysis

<b>Client Sample ID:</b> B30MW-1		<b>Date Sampled:</b> 07/21/20
<b>Lab Sample ID:</b> JD10474-1		<b>Date Received:</b> 07/22/20
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260C		
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191493.D	1	07/27/20 11:58	EH	n/a	n/a	V2D8277
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> B30MW-1 <b>Lab Sample ID:</b> JD10474-1 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/21/20 <b>Date Received:</b> 07/22/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
1066-40-6	Silanol, trimethyl-	8.92	23	ug/l	JN
	Total TIC, Volatile		23	ug/l	J

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-3		<b>Date Sampled:</b> 07/21/20
<b>Lab Sample ID:</b> JD10474-2		<b>Date Received:</b> 07/22/20
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260C		
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191494.D	1	07/27/20 12:28	EH	n/a	n/a	V2D8277
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

### VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-3 <b>Lab Sample ID:</b> JD10474-2 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/21/20 <b>Date Received:</b> 07/22/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
1066-40-6	Silanol, trimethyl-	8.92	8.6	ug/l	JN
	Total TIC, Volatile		8.6	ug/l	J

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.2  
4

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-3	<b>Date Sampled:</b> 07/21/20
<b>Lab Sample ID:</b> JD10474-2	<b>Date Received:</b> 07/22/20
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/23/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/23/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP22029

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BCPMW4-3	<b>Date Sampled:</b> 07/21/20
<b>Lab Sample ID:</b> JD10474-2F	<b>Date Received:</b> 07/22/20
<b>Matrix:</b> AQ - Groundwater Filtered	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/23/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/23/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP22029

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RL = Reporting Limit

## Report of Analysis

Client Sample ID:	FB072120MW1	Date Sampled:	07/21/20
Lab Sample ID:	JD10474-3	Date Received:	07/22/20
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	Northrop Grumman, OU3 Hydro, Bethpage, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191551.D	1	07/29/20 18:33	EH	n/a	n/a	V2D8279
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> FB072120MW1 <b>Lab Sample ID:</b> JD10474-3 <b>Matrix:</b> AQ - Field Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/21/20 <b>Date Received:</b> 07/22/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		81-124%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.4  
4

## Report of Analysis

<b>Client Sample ID:</b> FB072120MW1	<b>Date Sampled:</b> 07/21/20
<b>Lab Sample ID:</b> JD10474-3	<b>Date Received:</b> 07/22/20
<b>Matrix:</b> AQ - Field Blank Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/23/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>
Chromium	< 10	10	ug/l	1	07/23/20	07/23/20 ND	SW846 6010D <sup>1</sup>	SW846 3010A <sup>2</sup>

(1) Instrument QC Batch: MA49030

(2) Prep QC Batch: MP22029

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RL = Reporting Limit

4.4  
4



# Report of Analysis

<b>Client Sample ID:</b> TB072120MW1	
<b>Lab Sample ID:</b> JD10474-4	<b>Date Sampled:</b> 07/21/20
<b>Matrix:</b> AQ - Trip Blank Water	<b>Date Received:</b> 07/22/20
<b>Method:</b> SW846 8260C	<b>Percent Solids:</b> n/a
<b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D191552.D	1	07/29/20 19:04	EH	n/a	n/a	V2D8279
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU3 BPGWVS List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
106-99-0	1,3-Butadiene	ND	5.0	2.2	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-45-6	Chlorodifluoromethane	ND	5.0	2.9	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> TB072120MW1 <b>Lab Sample ID:</b> JD10474-4 <b>Matrix:</b> AQ - Trip Blank Water <b>Method:</b> SW846 8260C <b>Project:</b> Northrop Grumman, OU3 Hydro, Bethpage, NY	<b>Date Sampled:</b> 07/21/20 <b>Date Received:</b> 07/22/20 <b>Percent Solids:</b> n/a
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**VOA OU3 BPGWVS List**

CAS No.	Compound	Result	RL	MDL	Units	Q
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
75-68-3	1-chloro-1,1-difluoroethane	ND	5.0	3.5	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		81-124%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN6055-1  
**Client ID:** B30MW-1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN6055  
**Lab File ID:** G1824.D

**Sample Date:** 21-JUL-20  
**Received Date:** 22-JUL-20  
**Extract Date:** 23-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282535

**Analysis Date:** 24-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 27-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.24	ug/L	1	.25	0.24	0.081
1,4-Dioxane-D8		87.1	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN6055-2  
**Client ID:** BCPMW4-3  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN6055  
**Lab File ID:** G1825.D

**Sample Date:** 21-JUL-20  
**Received Date:** 22-JUL-20  
**Extract Date:** 23-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282535

**Analysis Date:** 24-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 27-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane		0.44	ug/L	1	.25	0.24	0.080
1,4-Dioxane-D8		73.3	%				

## Report of Analytical Results

**Client:** ARCADIS  
**Lab ID:** SN6055-3  
**Client ID:** FB072120MW1  
**Project:** Program #5A: OU3-Phase 2  
**SDG:** SN6055  
**Lab File ID:** G1826.D

**Sample Date:** 21-JUL-20  
**Received Date:** 22-JUL-20  
**Extract Date:** 23-JUL-20  
**Extracted By:** JPS  
**Extraction Method:** SW846 3520C  
**Lab Prep Batch:** WG282535

**Analysis Date:** 24-JUL-20  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D SIM  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 27-JUL-20

Compound	Qualifier	Result	Units	Dilution	PQL	ADJ PQL	ADJ MDL
1,4-Dioxane	U	0.25	ug/L	1	.25	0.25	0.086
1,4-Dioxane-D8		58.8	%				