DECEMBER 2016 GROUNDWATER SAMPLING DATA SUMMARY REPORT

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP)
SITE 1 OU2
BETHPAGE, NY

Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Atlantic
9324 Virginia Avenue
Building Z-144
Norfolk, Virginia 23511

May 2017

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Department of the Navy
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9324 Virginia Avenue
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Norfolk, Virginia 23511

Prepared by:

Resolution Consultants
A Joint Venture of AECOM & EnSafe
1500 Wells Fargo Building
440 Monticello Avenue
Norfolk, Virginia 23510

Contract Number: N62470-11-D-8013
CTO WE15

May 2017

Brian Caldwell

Brian Caldwell
Contract Task Order Manager

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List of Acronyms and Abbreviations

DOT	Department of Transportation
IDW	Investigation Derived Waste
Katahdin	Katahdin Analytical Services
NG	Northrop Grumman
NWIRP	Naval Weapons Industrial Reserve Plant
ONCT	Onsite Containment System
OU	Operable Unit
PCBs	Polychlorinated Biphenyls
POTW	Publicly Owned Treatment Works
QA	Quality Assurance
QC	Quality Control
SAP	Sampling and Analysis Plan
UFP	Uniform Federal Policy
VOC	Volatile Organic Compounds

1.0 PROJECT BACKGROUND

Resolution Consultants has prepared this Groundwater Sampling Data Summary Report for the Naval Facilities Engineering Command, Mid-Atlantic under contract task order WE15 Contract N62470-11-D-8013. The report describes quarterly sampling activities in December 2016, which is part of the Navy's ongoing Environmental Restoration Program for the Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage Operable Unit (OU) 2 Site 1 offsite plume. NWIRP Bethpage is located in east-central Nassau County, Long Island, New York, approximately 30 miles east of New York City (Figure 1).

This data summary report provides information on quarterly sampling of 58 Navy-owned monitoring wells by Resolution Consultants on behalf of the Navy, and by ARCADIS on behalf of the Navy at the direction of Northrop Grumman (NG) as part of an agreement between the Navy and NG. The purpose of this sampling is to provide information on the extent and magnitude of volatile organic compounds (VOCs) located in a narrow area immediately south of the Onsite Containment System (ONCT) in the western offsite plume, which could represent contamination that has bypassed the ONCT, to evaluate the southernmost extent of the OU2 plume, and to evaluate outpost wells intended to provide early warning of plume migration to public water supply wells. The locations of monitoring wells sampled as part of this effort are shown in Figure 2. Well construction information and sampling responsibility are listed in Table 1.

2.0 FIELD PROGRAM

Field tasks were conducted in December of 2016 in accordance with the Uniform Federal Policy (UFP) Sampling and Analysis Plan (SAP) Addendum: *Groundwater Sampling Using Low Stress (Low Flow) Purging and Sampling Protocol* (Resolution Consultants, 2013). The field investigation included purging and sampling of monitoring wells in the quarterly groundwater sampling network.

The December 2016 quarterly sampling round consisted of a total of 58 wells (Table 1). Of these, 35 groundwater wells were sampled by Resolution Consultants and 23 were sampled by ARCADIS, the NG consultant.

2.1 Sampling

Resolution Consultants purged monitoring wells using a bladder pump with the intake placed at the approximate midpoint of the screened interval. The following field water quality parameters were continuously measured during purging: water temperature, pH, conductivity, oxidation-reduction potential, dissolved oxygen and turbidity. Groundwater analytical samples were collected when field water quality parameters stabilized. Samples were analyzed for VOCs via Method 8260C and 1,4-dioxane via Method 8270D SIM by Katahdin Analytical Services (Katahdin). All purge water was managed as investigation derived waste (IDW). Quality assurance (QA) and quality control (QC) samples were collected during the sampling effort.

Analytical results and stabilized field parameters for wells sampled by Resolution Consultants are summarized in Table 2 and Table 3, respectively. Groundwater sample forms and data validation packages for wells sampled by Resolution Consultants are included in Appendix A and B, respectively.

Results for ARCADIS-sampled wells are provided in Table 4, Table 5 and Table 6; data validation packages are included in Appendix C. Samples collected from outpost wells were analyzed for VOCs via method 524.2 and 1,4-dioxane via Method 522 by Accutest Laboratories. Samples collected from remaining wells were analyzed for VOCs via Method 8260C and 1,4-dioxane via Method 8270D SIM by Accutest Laboratories.

Additional Navy-owned wells are sampled by ARCADIS as part of separate and ongoing OU2 monitoring programs, as summarized in the sampling schedule in Appendix D. ARCADIS will document these activities and results in their 2016 Annual Groundwater Monitoring Report,

scheduled for submission to New York State Department of Environmental Conservation in the summer of 2017.

2.2 Investigation Derived Waste

Resolution Consultants utilized dedicated and disposable sampling equipment when possible to avoid the potential for cross-contamination of samples. The sampling equipment included dedicated disposable polyethylene tubing, disposable gloves, and laboratory supplied sample bottles. Hand held equipment was decontaminated using a luminox or micro 90 water wash, a potable water rinse, followed by a distilled water rinse. Purge water was collected in 5-gallon pails or 55-gallon drums.

Resolution Consultants transported purge water from point of generation to the designated staging area at NWIRP in Department of Transportation (DOT) approved 5-gallon pails. Purge water was then containerized in a frac tank and stored at NWIRP Bethpage for characterization and ultimate disposal to the Nassau County Publicly Owned Treatment Works (POTW) in accordance with the facility's existing discharge permit. A representative water sample was collected from each of the frac tanks and submitted to Katahdin for analysis of VOCs via Method SW 624, pH via Method SW 9040B, Polychlorinated Biphenyls (PCBs) via Method 8082 and Total Metals via Method SW 846. All analytical criteria were met for disposal of water. No solid waste was generated during sampling.

3.0 SUMMARY

Well construction information for all wells sampled by Resolution Consultants and ARCADIS is summarized in Table 1.

Analytical results and stabilized field water quality parameters for wells sampled by Resolution Consultants are summarized in Tables 2 and 3, respectively. Groundwater sample forms and data validation packages for wells sampled by Resolution Consultants are included in Appendix A and B, respectively.

Analytical results for wells sampled by ARCADIS are summarized in Table 4, Table 5 and Table 6. Data validation packages for wells sampled by ARCADIS are included in Appendix C.

The sampling schedule of additional Navy-owned wells by ARCADIS, as part of separate and ongoing OU2 monitoring programs, is summarized in Appendix D.

4.0 REFERENCES

Resolution Consultants, 2013. UFP SAP Addendum, *Groundwater Sampling Using Low Stress (Low Flow) Purging and Sampling Protocol.* November.

Tables

TABLE 1
MONITORING WELL CONSTRUCTION SUMMARY
2016 OU2 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

Well	Total Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Mid-screen (ft bgs)	Sump Length (ft)	VPB Affiliation	Sampled By
RE103D1	645	625	640	630	5	VPB137	Resolution
RE103D2	673	653	673	663	0	VPB137	Resolution
RE103D3	735	715	730	720	5	VPB137	Resolution
RE104D1	375	350	370	360	5	VPB138	Resolution
RE104D2	735	710	730	720	5	VPB138	Resolution
RE104D3	785	760	780	770	5	VPB138	Resolution
RE105D1	555	530	550	540	5	VPB139	Resolution
RE105D2	755	730	750	740	5	VPB139	Resolution
RE107D1	530	505	525	515	5	VPB141	ARCADIS
RE107D2	585	560	580	570	5	VPB141	ARCADIS
RE107D3	670	645	665	655	5	VPB141	ARCADIS
RE108D1	555	530	550	540	5	VPB142	Resolution
RE108D2	655	630	650	640	5	VPB142	Resolution
RE114D1	560	535	555	545	5	VPB148	ARCADIS
RE114D2	635	610	630	620	5	VPB148	ARCADIS
RE114D3	725	700	720	710	5	VPB148	ARCADIS
RE117D1	760	730	755	742.5	5	VPB151	Resolution
RE117D2	810	780	805	792.5	5	VPB151	Resolution
RE118D1	795	765	790	777.5	5	VPB152	ARCADIS
RE119D1	745	715	740	727.5	5	VPB153	ARCADIS
RE120D1	655	630	650	640	5	VPB154	Resolution
RE120D2	713	690	710	700	3	VPB154	Resolution
RE120D3	765	740	760	750	5	VPB154	Resolution
RE121D1	575	550	570	560	5	VPB155	ARCADIS
RE121D2	755	730	750	740	5	VPB155	ARCADIS
RE122D1	545	520	540	530	5	VPB156	Resolution
RE122D2	615	590	610	600	5	VPB156	Resolution
RE122D3	740	715	735	725	5	VPB156	Resolution
RE123D1	505	480	500	490	5	VPB157	Resolution
RE123D2	660	635	655	645	5	VPB157	Resolution
RE123D3	840	815	835	825	5	VPB157	Resolution
RE125D1	345	320	340	330	5	VPB159	Resolution
RE125D2	605	580	600	590	5	VPB159	Resolution
RE125D3	695	670	690	680	5	VPB159	Resolution
RE126D1	525	500	520	510	5	VPB160	Resolution

TABLE 1
MONITORING WELL CONSTRUCTION SUMMARY
2016 OU2 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

Well	Total Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Mid-screen (ft bgs)	Sump Length (ft)	VPB Affiliation	Sampled By
RE126D2	580	555	575	565	5	VPB160	Resolution
RE126D3	665	640	660	650	5	VPB160	Resolution
RE128D1	685	660	680	670	5	VPB162	Resolution
RE128D2	760	735	755	745	5	VPB162	Resolution
RE131D1	455	430	450	440	5	VPB165	Resolution
RE131D2	595	565	590	577.5	5	VPB165	Resolution
RE131D3	685	660	680	670	5	VPB165	Resolution
TT101D	350	325	345	335	5	VPB129	Resolution
TT101D1	595	570	590	580	5	VPB129	Resolution
TT101D2	765	740	760	750	5	VPB129	Resolution
BPOW5-1	515	480	510	495	5	VPB132	ARCADIS
BPOW5-2	585	540	580	560	5	VPB132	ARCADIS
BPOW5-3	665	620	660	640	5	VPB132	ARCADIS
BPOW5-4	575	545	570	557.5	5	VPB151	ARCADIS
BPOW5-5	545	515	540	527.5	5	VPB152	ARCADIS
BPOW5-6	615	585	610	597.5	5	VPB152	ARCADIS
BPOW5-7	555	525	550	537.5	5	VPB152	ARCADIS
BPOW6-1	580	550	575	562.5	5	VPB145	ARCADIS
BPOW6-2	785	755	780	767.5	5	VPB145	ARCADIS
BPOW6-3	780	750	775	762.5	5	VPB146	ARCADIS
BPOW6-4	575	545	570	557.5	5	VPB146	ARCADIS
BPOW6-5	555	525	550	537.5	5	VPB147	ARCADIS
BPOW6-6	800	770	795	782.5	5	VPB147	ARCADIS

ft bgs - feet below ground surface

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE103D1	RE103D2	RE103D3	RE104D1
Sample Date		12/5/2016	12/5/2016	12/5/2016	12/5/2016
Sample ID		RE103D1-GW-120516	RE103D2-GW-120516	RE103D3-GW-120516	RE104D1-GW-120516
Sample type code		N	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	**0.42 J**	<0.50 U	<0.50 U	<0.50 U
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**13**	<5.0 U	**2.5**	**3.0 J**
1,1,2-TRICHLOROETHANE	1	**0.49 J**	***<5.0 U***	<0.50 U	<0.50 U
1,1-DICHLOROETHANE	5	**0.90 J**	<5.0 U	<0.50 U	<0.50 U
1,1-DICHLOROETHENE	5	**6.6**	<5.0 U	**0.46 J**	**0.44 J**
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<0.75 U***	***<0.75 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**3.4**	***<10 U***	**0.74 J**	**0.81 J**
1,2-DICHLOROPROPANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**17**	**2.5**	**0.96**	**7.1**
2-BUTANONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
2-HEXANONE	50	<2.5 UJ	<2.5 UJ	<2.5 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<2.5 U	<2.5 U	<2.5 U
ACETONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
BENZENE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOFORM	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ
CARBON DISULFIDE	60	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CARBON TETRACHLORIDE	5	**0.46 J**	<5.0 U	<0.50 U	<0.50 U
CHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CHLOROETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
CHLOROFORM	7	**0.63 J**	<5.0 U	**0.59 J**	<0.50 U
CHLOROMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	**3.4**	<5.0 U	**0.74 J**	**0.81 J**
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	**0.40 J**
ETHYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
M- AND P-XYLENE	NL	<1.0 U	<1.0 U	<1.0 U	<1.0 U
METHYL ACETATE	NL	<0.75 U	<0.75 U	<0.75 U	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYLENE CHLORIDE	5	<2.5 U	<2.5 U	<2.5 U	<2.5 U
O-XYLENE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
STYRENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TETRACHLOROETHENE	5	**4.1**	<5.0 U	**0.52 J**	**2.3**
TOLUENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
TRICHLOROETHENE	5	**940 J**	**780 J**	**500 J**	**84**
TRICHLOROFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
VINYL CHLORIDE	2	<1.0 U	<1.0 U	<1.0 U	<1.0 U
XYLENES, TOTAL	5	<1.5 U	<1.5 U	<1.5 U	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE104D1	RE104D2	RE104D3	RE105D1
Sample Date		12/5/2016	12/5/2016	12/5/2016	12/12/2016
Sample ID		DUP01-GW-120516	RE104D2-GW-120516	RE104D3-GW-120516	RE105D1-GW-121216
Sample type code		FD	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	**0.33 J**
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**3**	<0.50 UJ	<0.50 U	**5.8**
1,1,2-TRICHLOROETHANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1-DICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	**1.1**
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<0.75 U***	***<0.75 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**0.77 J**	**3.1 J**	<1.0 U	**1.5 J**
1,2-DICHLOROPROPANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**9.5**	**0.35**	<0.17 U	**4.7**
2-BUTANONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
2-HEXANONE	50	<2.5 UJ	<2.5 UJ	<2.5 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<2.5 U	<2.5 U	<2.5 U
ACETONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 UJ
BENZENE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOFORM	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOMETHANE	5	<1.0 U	<1.0 UJ	<1.0 U	<1.0 U
CARBON DISULFIDE	60	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CARBON TETRACHLORIDE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CHLOROETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 U
CHLOROFORM	7	<0.50 U	**0.54 J**	<0.50 U	<0.50 U
CHLOROMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	**0.77 J**	**3.1 J**	<0.50 U	**1.5**
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	**0.40 J**
ETHYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
M- AND P-XYLENE	NL	<1.0 U	<1.0 U	<1.0 U	<1.0 U
METHYL ACETATE	NL	<0.75 U	<0.75 U	<0.75 U	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYLENE CHLORIDE	5	<2.5 U	<2.5 U	<2.5 U	<2.5 U
O-XYLENE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
STYRENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TETRACHLOROETHENE	5	**2.3**	<0.50 U	<0.50 U	**0.43 J**
TOLUENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
TRICHLOROETHENE	5	**85**	**10 J**	**0.56 J**	**110**
TRICHLOROFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 U
VINYL CHLORIDE	2	<1.0 U	<1.0 U	<1.0 U	<1.0 U
XYLENES, TOTAL	5	<1.5 U	<1.5 U	<1.5 U	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE105D2	RE108D1	RE108D2	RE117D1
Sample Date		12/12/2016	12/12/2016	12/12/2016	12/9/2016
Sample ID		RE105D2-GW-121216	RE108D1-GW-121216	RE108D2-GW-121216	RE117D1-GW-120916
Sample type code		N	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,1,2,2-TETRACHLOROETHANE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**20**	**0.64 J**	**4.9 J**	<0.50 U
1,1,2-TRICHLOROETHANE	1	***<2.0 U***	<0.50 U	***<2.5 U***	<0.50 U
1,1-DICHLOROETHANE	5	**1.5 J**	<0.50 U	**4.3 J**	<0.50 U
1,1-DICHLOROETHENE	5	**7.8**	<0.50 U	**5.4**	<0.50 U
1,2,4-TRICHLOROBENZENE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<3.0 U***	***<0.75 U***	***<3.8 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,2-DICHLOROBENZENE	3	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,2-DICHLOROETHANE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**4.1 J**	<1.0 U	**7.3 J**	<1.0 U
1,2-DICHLOROPROPANE	1	***<2.0 U***	<0.50 U	***<2.5 U***	<0.50 U
1,3-DICHLOROBENZENE	3	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,4-DICHLOROBENZENE	3	<2.0 U	<0.50 U	<2.5 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**13**	**8.8**	**5.3**	<0.19 U
2-BUTANONE	50	<10 U	<2.5 U	<12 U	<2.5 U
2-HEXANONE	50	<10 UJ	<2.5 UJ	<12 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<10 U	<2.5 U	<12 U	<2.5 U
ACETONE	50	<10 UJ	<2.5 UJ	<12 UJ	<2.5 UJ
BENZENE	1	***<2.0 U***	<0.50 U	***<2.5 U***	<0.50 U
BROMODICHLOROMETHANE	50	<2.0 U	<0.50 U	<2.5 U	<0.50 U
BROMOFORM	50	<2.0 U	<0.50 U	<2.5 U	<0.50 U
BROMOMETHANE	5	<4.0 U	<1.0 U	<5.0 U	<1.0 U
CARBON DISULFIDE	60	<2.0 U	<0.50 U	<2.5 U	<0.50 U
CARBON TETRACHLORIDE	5	**2.8 J**	<0.50 U	**1.3 J**	<0.50 U
CHLOROBENZENE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
CHLOROETHANE	5	<4.0 U	<1.0 U	<5.0 U	<1.0 U
CHLOROFORM	7	**1.9 J**	<0.50 U	**2.9 J**	<0.50 U
CHLOROMETHANE	5	<4.0 U	<1.0 U	<5.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	**4.1**	<0.50 U	**7.3**	<0.50 U
CIS-1,3-DICHLOROPROPENE	0.4	***<2.0 U***	***<0.50 U***	***<2.5 U***	***<0.50 U***
CYCLOHEXANE	NL	<2.0 U	<0.50 U	<2.5 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<4.0 UJ	<1.0 UJ	<5.0 UJ	<1.0 UJ
ETHYLBENZENE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
ISOPROPYLBENZENE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
M- AND P-XYLENE	NL	<4.0 U	<1.0 U	<5.0 U	<1.0 U
METHYL ACETATE	NL	<3.0 U	<0.75 U	<3.8 U	<0.75 U
METHYL CYCLOHEXANE	NL	<2.0 U	<0.50 U	<2.5 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<2.0 U	<0.50 U	<2.5 U	<0.50 U
METHYLENE CHLORIDE	5	***<10 U***	<2.5 U	***<12 U***	<2.5 U
O-XYLENE	NL	<2.0 U	<0.50 U	<2.5 U	<0.50 U
STYRENE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
TETRACHLOROETHENE	5	**2.6 J**	**1.5**	<2.5 U	<0.50 U
TOLUENE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<2.0 U	<0.50 U	<2.5 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<2.0 U***	***<0.50 U***	***<2.5 U***	***<0.50 U***
TRICHLOROETHENE	5	**1800**	**56**	**2900**	**17**
TRICHLOROFLUOROMETHANE	5	<4.0 U	<1.0 U	<5.0 U	<1.0 U
VINYL CHLORIDE	2	***<4.0 U***	<1.0 U	***<5.0 U***	<1.0 U
XYLENES, TOTAL	5	***<6.0 U***	<1.5 U	***<7.5 U***	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE117D2	RE120D1	RE120D2	RE120D3
Sample Date		12/9/2016	12/9/2016	12/9/2016	12/9/2016
Sample ID		RE117D2-GW-120916	RE120D1-GW-120916	RE120D2-GW-120916	RE120D3-GW-120916
Sample type code		N	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	<0.50 U	**1.1 J**	**0.32 J**	<0.50 U
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	<0.50 U	**22**	**15**	**0.80 J**
1,1,2-TRICHLOROETHANE	1	<0.50 U	**1.1 J**	**0.48 J**	<0.50 U
1,1-DICHLOROETHANE	5	<0.50 U	**2.4**	**0.98 J**	<0.50 U
1,1-DICHLOROETHENE	5	<0.50 U	**13**	**5.2**	<0.50 U
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<1.5 U***	***<0.75 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	<1.0 U	**3.5 J**	**3**	<1.0 U
1,2-DICHLOROPROPANE	1	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U	<1.0 U	<0.50 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	<0.17 U	**15**	**10**	**0.31**
2-BUTANONE	50	<2.5 U	<5.0 U	<2.5 U	<2.5 U
2-HEXANONE	50	<2.5 UJ	<5.0 UJ	<2.5 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<5.0 U	<2.5 U	<2.5 U
ACETONE	50	<2.5 UJ	<5.0 UJ	<2.5 UJ	<2.5 UJ
BENZENE	1	<0.50 U	<1.0 U	<0.50 U	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U	<1.0 U	<0.50 U	<0.50 U
BROMOFORM	50	<0.50 U	<1.0 U	<0.50 U	<0.50 U
BROMOMETHANE	5	<1.0 U	<2.0 U	<1.0 U	<1.0 U
CARBON DISULFIDE	60	<0.50 U	<1.0 U	<0.50 U	<0.50 U
CARBON TETRACHLORIDE	5	<0.50 U	**0.54 J**	**0.62 J**	<0.50 U
CHLOROBENZENE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
CHLOROETHANE	5	<1.0 U	<2.0 U	<1.0 U	<1.0 U
CHLOROFORM	7	<0.50 U	**0.73 J**	**0.61 J**	<0.50 U
CHLOROMETHANE	5	<1.0 U	<2.0 U	<1.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	<0.50 U	**3.5**	**3**	<0.50 U
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<1.0 U***	***<0.50 U***	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U	<1.0 U	<0.50 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<1.0 UJ	<2.0 UJ	**0.41 J**	<1.0 UJ
ETHYLBENZENE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
M- AND P-XYLENE	NL	<1.0 U	<2.0 U	<1.0 U	<1.0 U
METHYL ACETATE	NL	<0.75 U	<1.5 U	<0.75 U	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U	<1.0 U	<0.50 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<1.0 U	<0.50 U	<0.50 U
METHYLENE CHLORIDE	5	<2.5 U	<5.0 U	<2.5 U	<2.5 U
O-XYLENE	NL	<0.50 U	<1.0 U	<0.50 U	<0.50 U
STYRENE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
TETRACHLOROETHENE	5	<0.50 U	**1.7 J**	**3.1**	<0.50 U
TOLUENE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U	<1.0 U	<0.50 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<1.0 U***	***<0.50 U***	***<0.50 U***
TRICHLOROETHENE	5	<0.50 U	**1000**	**670**	**41**
TRICHLOROFLUOROMETHANE	5	<1.0 U	<2.0 U	<1.0 U	<1.0 U
VINYL CHLORIDE	2	<1.0 U	<2.0 U	<1.0 U	<1.0 U
XYLENES, TOTAL	5	<1.5 U	<3.0 U	<1.5 U	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE122D1	RE122D2	RE122D3	RE122D3
Sample Date		12/8/2016	12/8/2016	12/8/2016	12/8/2016
Sample ID		RE122D1-GW-120816	RE122D2-GW-120816	RE122D3-GW-120816	DUP02-GW-120816
Sample type code		N	N	N	FD
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**3.4**	**15 J**	<0.50 U	<0.50 U
1,1,2-TRICHLOROETHANE	1	**0.35 J**	**2.5 J**	<0.50 U	<0.50 U
1,1-DICHLOROETHANE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,1-DICHLOROETHENE	5	**0.91 J**	**7.4**	<0.50 U	<0.50 U
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<3.0 U***	***<0.75 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**2**	**6.6 J**	<1.0 U	<1.0 U
1,2-DICHLOROPROPANE	1	<0.50 U	***<2.0 U***	<0.50 U	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U	<2.0 U	<0.50 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**7**	**12**	<0.17 U	<0.17 U
2-BUTANONE	50	<2.5 U	<10 U	<2.5 U	<2.5 U
2-HEXANONE	50	<2.5 UJ	<10 UJ	<2.5 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<10 U	<2.5 U	<2.5 U
ACETONE	50	<2.5 UJ	<10 UJ	<2.5 UJ	<2.5 UJ
BENZENE	1	<0.50 U	***<2.0 U***	<0.50 U	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U	<2.0 U	<0.50 U	<0.50 U
BROMOFORM	50	<0.50 U	<2.0 U	<0.50 U	<0.50 U
BROMOMETHANE	5	<1.0 U	<4.0 U	<1.0 U	<1.0 U
CARBON DISULFIDE	60	<0.50 U	<2.0 U	<0.50 U	<0.50 U
CARBON TETRACHLORIDE	5	**0.57 J**	**2.5 J**	<0.50 U	<0.50 U
CHLOROBENZENE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
CHLOROETHANE	5	<1.0 U	<4.0 U	<1.0 U	<1.0 U
CHLOROFORM	7	**0.48 J**	**2.3 J**	<0.50 U	<0.50 U
CHLOROMETHANE	5	<1.0 U	<4.0 U	<1.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	**1.7**	**6.6**	<0.50 U	<0.50 U
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<2.0 U***	***<0.50 U***	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U	<2.0 U	<0.50 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<1.0 UJ	<4.0 UJ	<1.0 UJ	<1.0 UJ
ETHYLBENZENE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
M- AND P-XYLENE	NL	<1.0 U	<4.0 U	<1.0 U	<1.0 U
METHYL ACETATE	NL	<0.75 U	<3.0 U	<0.75 U	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U	<2.0 U	<0.50 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<2.0 U	<0.50 U	<0.50 U
METHYLENE CHLORIDE	5	<2.5 U	***<10 U***	<2.5 U	<2.5 U
O-XYLENE	NL	<0.50 U	<2.0 U	<0.50 U	<0.50 U
STYRENE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
TETRACHLOROETHENE	5	**1.6**	**3.4 J**	<0.50 U	<0.50 U
TOLUENE	5	<0.50 U	<2.0 U	<0.50 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	**0.32 J**	<2.0 U	<0.50 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<2.0 U***	***<0.50 U***	***<0.50 U***
TRICHLOROETHENE	5	**520 J**	**5300 J**	**5.1**	**5.1**
TRICHLOROFLUOROMETHANE	5	<1.0 U	<4.0 U	<1.0 U	<1.0 U
VINYL CHLORIDE	2	<1.0 U	***<4.0 U***	<1.0 U	<1.0 U
XYLENES, TOTAL	5	<1.5 U	***<6.0 U***	<1.5 U	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE123D1	RE123D2	RE123D3	RE125D1
Sample Date		12/7/2016	12/7/2016	12/7/2016	12/7/2016
Sample ID		RE123D1-GW-120716	RE123D2-GW-120716	RE123D3-GW-120716	RE125D1-GW-120716
Sample type code		N	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	**14 J**
1,1,2-TRICHLOROETHANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1-DICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	**2.4 J**
1,1-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	**2.5 J**
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<0.75 U***	***<0.75 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 UJ	<0.50 UJ	<0.50 UJ	<0.50 UJ
1,2-DICHLOROETHENE, TOTAL	5	<1.0 U	<1.0 U	<1.0 U	**4.2 J**
1,2-DICHLOROPROPANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**5.8**	**0.66**	<0.17 U	**14**
2-BUTANONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
2-HEXANONE	50	<2.5 UJ	<2.5 UJ	<2.5 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<2.5 U	<2.5 U	<2.5 U
ACETONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
BENZENE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOFORM	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CARBON DISULFIDE	60	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CARBON TETRACHLORIDE	5	<0.50 U	<0.50 U	<0.50 U	**0.26 J**
CHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CHLOROETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
CHLOROFORM	7	<0.50 U	<0.50 U	<0.50 U	**0.73 J**
CHLOROMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	**4.2 J**
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	**0.53 J**
ETHYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
M- AND P-XYLENE	NL	<1.0 U	<1.0 U	<1.0 U	<1.0 U
METHYL ACETATE	NL	<0.75 U	<0.75 U	<0.75 U	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYLENE CHLORIDE	5	<2.5 U	<2.5 U	<2.5 U	<2.5 U
O-XYLENE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
STYRENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TETRACHLOROETHENE	5	<0.50 U	**1.0 J**	<0.50 U	**6.4 J**
TOLUENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
TRICHLOROETHENE	5	**7.3 J**	**1.8 J**	<0.50 U	**180 J**
TRICHLOROFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
VINYL CHLORIDE	2	<1.0 U	<1.0 U	<1.0 U	<1.0 U
XYLENES, TOTAL	5	<1.5 U	<1.5 U	<1.5 U	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE125D2	RE125D3	RE126D1	RE126D2
Sample Date		12/7/2016	12/7/2016	12/6/2016	12/6/2016
Sample ID		RE125D2-GW-120716	RE125D3-GW-120716	RE126D1-GW-120616	RE126D2-GW-120616
Sample type code		N	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	**0.73 J**	<0.50 U	<0.50 U	**0.89 J**
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**25 J**	**36 J**	**0.69 J**	**1.1**
1,1,2-TRICHLOROETHANE	1	<1.0 U	<0.50 U	<0.50 U	**0.44 J**
1,1-DICHLOROETHANE	5	<1.0 U	<0.50 U	<0.50 U	**2.2**
1,1-DICHLOROETHENE	5	**6.7 J**	**0.84 J**	<0.50 U	**1.1**
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<0.75 U***	***<0.75 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 UJ	<0.50 UJ	<0.50 U	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**3.4 J**	**1.5 J**	<1.0 U	**2.9**
1,2-DICHLOROPROPANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**14**	**4**	**7.2**	**7**
2-BUTANONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
2-HEXANONE	50	<2.5 UJ	<2.5 UJ	<2.5 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<2.5 U	<2.5 U	<2.5 U
ACETONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
BENZENE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOFORM	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CARBON DISULFIDE	60	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CARBON TETRACHLORIDE	5	<1.0 U	<0.50 U	<0.50 U	**0.57 J**
CHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CHLOROETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
CHLOROFORM	7	<0.50 U	<0.50 U	<0.50 U	**0.62 J**
CHLOROMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	**3.4 J**	**1.5 J**	<0.50 U	**2.9**
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<2.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
ETHYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
M- AND P-XYLENE	NL	<1.0 U	<1.0 U	<1.0 U	<1.0 U
METHYL ACETATE	NL	<0.75 U	<0.75 U	<0.75 U	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYLENE CHLORIDE	5	<2.5 U	<2.5 U	<2.5 U	<2.5 U
O-XYLENE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
STYRENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TETRACHLOROETHENE	5	**3.2 J**	**1.6 J**	**0.79 J**	**0.50 J**
TOLUENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
TRICHLOROETHENE	5	**240 J**	**150 J**	**26**	**530 J**
TRICHLOROFLUOROMETHANE	5	**0.41 J**	<1.0 UJ	<1.0 UJ	<1.0 UJ
VINYL CHLORIDE	2	<1.0 U	<1.0 U	<1.0 U	<1.0 U
XYLENES, TOTAL	5	<1.5 U	<1.5 U	<1.5 U	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE126D3	RE128D1	RE128D2	RE131D1
Sample Date		12/6/2016	12/8/2016	12/8/2016	12/6/2016
Sample ID		RE126D3-GW-120616	RE128D1-GW-120816	RE128D2-GW-120816	RE131D1-GW-120616
Sample type code		N	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	**5.4 J**
1,1,2-TRICHLOROETHANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1-DICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,1-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	**0.82 J**
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<0.75 U***	***<0.75 U***	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 U	<0.50 UJ	<0.50 UJ	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	<1.0 U	<1.0 U	<1.0 U	**4.2 J**
1,2-DICHLOROPROPANE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**1.3**	<0.17 U	<0.18 U	**11**
2-BUTANONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
2-HEXANONE	50	<2.5 UJ	<2.5 UJ	<2.5 UJ	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<2.5 U	<2.5 U	<2.5 U
ACETONE	50	<2.5 U	<2.5 U	<2.5 U	<2.5 U
BENZENE	1	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOFORM	50	<0.50 U	<0.50 U	<0.50 U	<0.50 U
BROMOMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CARBON DISULFIDE	60	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CARBON TETRACHLORIDE	5	<0.50 U	<0.50 U	<0.50 U	**0.25 J**
CHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
CHLOROETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
CHLOROFORM	7	<0.50 U	<0.50 U	<0.50 U	**3.4 J**
CHLOROMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U
CIS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	**4.2 J**
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
DICHLORODIFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
ETHYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
M- AND P-XYLENE	NL	<1.0 U	<1.0 U	<1.0 U	<1.0 U
METHYL ACETATE	NL	<0.75 U	<0.75 U	<0.75 U	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<0.50 U	<0.50 U	**0.54 J**
METHYLENE CHLORIDE	5	<2.5 U	<2.5 U	<2.5 U	<2.5 U
O-XYLENE	NL	<0.50 U	<0.50 U	<0.50 U	<0.50 U
STYRENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TETRACHLOROETHENE	5	**1.6**	<0.50 U	<0.50 U	**7.5 J**
TOLUENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<0.50 U***
TRICHLOROETHENE	5	**3.3**	<0.50 U	<0.50 U	**100 J**
TRICHLOROFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 UJ	<1.0 UJ
VINYL CHLORIDE	2	<1.0 U	<1.0 U	<1.0 U	<1.0 U
XYLENES, TOTAL	5	<1.5 U	<1.5 U	<1.5 U	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE131D2	RE131D3	TT101D1	TT101D2
Sample Date		12/6/2016	12/6/2016	12/12/2016	12/12/2016
Sample ID		RE131D2-GW-120616	RE131D3-GW-120616	TT101D1-GW-121216	TT101D2-GW-121216
Sample type code		N	N	N	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	<0.50 U	<0.50 U	**0.60 J**	<1.0 U
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**250 J**	**130**	**13**	**20**
1,1,2-TRICHLOROETHANE	1	<0.50 U	<0.50 U	**0.40 J**	**0.87 J**
1,1-DICHLOROETHANE	5	<0.50 U	<0.50 U	**0.88 J**	**0.80 J**
1,1-DICHLOROETHENE	5	<2.5 U	**0.98 J**	**4.9**	**4.6**
1,2,4-TRICHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***	***<0.75 U***	***<0.75 U***	***<1.5 U***
1,2-DIBROMOETHANE	NL	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,2-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,2-DICHLOROETHANE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,2-DICHLOROETHENE, TOTAL	5	**4.1 J**	<1.0 U	**1.8 J**	**1.9 J**
1,2-DICHLOROPROPANE	1	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,3-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,4-DICHLOROBENZENE	3	<0.50 U	<0.50 U	<0.50 U	<1.0 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**7.3**	**2**	**8.2**	**2.8**
2-BUTANONE	50	<2.5 U	<2.5 U	<2.5 U	<5.0 U
2-HEXANONE	50	<2.5 UJ	<2.5 UJ	<2.5 UJ	<5.0 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U	<2.5 U	<2.5 U	<5.0 U
ACETONE	50	<2.5 U	<2.5 U	<2.5 UJ	<5.0 UJ
BENZENE	1	<0.50 U	<0.50 U	<0.50 U	<1.0 U
BROMODICHLOROMETHANE	50	<0.50 U	<0.50 U	<0.50 U	<1.0 U
BROMOFORM	50	<0.50 U	<0.50 U	<0.50 U	<1.0 U
BROMOMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<2.0 U
CARBON DISULFIDE	60	<0.50 U	<0.50 U	<0.50 U	<1.0 U
CARBON TETRACHLORIDE	5	<2.5 U	<0.50 U	**1.8**	**1.3 J**
CHLOROBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
CHLOROETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 U	<2.0 U
CHLOROFORM	7	<2.5 U	<0.50 U	**0.89 J**	**0.97 J**
CHLOROMETHANE	5	<1.0 U	<1.0 U	<1.0 U	<2.0 U
CIS-1,2-DICHLOROETHENE	5	**4.1 J**	<0.50 U	**1.8**	**1.9 J**
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<1.0 U***
CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<1.0 U
DIBROMOCHLOROMETHANE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
DICHLORODIFLUOROMETHANE	5	<5.0 UJ	<1.0 UJ	**1.7 J**	<2.0 UJ
ETHYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
ISOPROPYLBENZENE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
M- AND P-XYLENE	NL	<1.0 U	<1.0 U	<1.0 U	<2.0 U
METHYL ACETATE	NL	<0.75 U	<0.75 U	<0.75 U	<1.5 U
METHYL CYCLOHEXANE	NL	<0.50 U	<0.50 U	<0.50 U	<1.0 U
METHYL TERT-BUTYL ETHER	10	<0.50 U	<0.50 U	<0.50 U	<1.0 U
METHYLENE CHLORIDE	5	<2.5 U	<2.5 U	<2.5 U	<5.0 U
O-XYLENE	NL	<0.50 U	<0.50 U	<0.50 U	<1.0 U
STYRENE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
TETRACHLOROETHENE	5	**6.0 J**	**1.5**	<0.50 U	**1.4 J**
TOLUENE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U	<0.50 U	<0.50 U	<1.0 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***	***<0.50 U***	***<0.50 U***	***<1.0 U***
TRICHLOROETHENE	5	**54 J**	**6.6**	**190**	**740**
TRICHLOROFLUOROMETHANE	5	<1.0 UJ	<1.0 UJ	<1.0 U	<2.0 U
VINYL CHLORIDE	2	<1.0 U	<1.0 U	<1.0 U	<2.0 U
XYLENES, TOTAL	5	<1.5 U	<1.5 U	<1.5 U	<3.0 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	TT101D
Sample Date		12/12/2016
Sample ID		TT101D-GW-121216
Sample type code		N
VOC 8260C (ug/L)		
1,1,1-TRICHLOROETHANE	5	**0.28 J**
1,1,2,2-TETRACHLOROETHANE	5	<0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**12**
1,1,2-TRICHLOROETHANE	1	<0.50 U
1,1-DICHLOROETHANE	5	**0.90 J**
1,1-DICHLOROETHENE	5	**3**
1,2,4-TRICHLOROBENZENE	5	<0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***<0.75 U***
1,2-DIBROMOETHANE	NL	<0.50 U
1,2-DICHLOROBENZENE	3	<0.50 U
1,2-DICHLOROETHANE	5	<0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**3**
1,2-DICHLOROPROPANE	1	<0.50 U
1,3-DICHLOROBENZENE	3	<0.50 U
1,4-DICHLOROBENZENE	3	<0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**8.6**
2-BUTANONE	50	<2.5 U
2-HEXANONE	50	<2.5 UJ
4-METHYL-2-PENTANONE	NL	<2.5 U
ACETONE	50	<2.5 UJ
BENZENE	1	<0.50 U
BROMODICHLOROMETHANE	50	<0.50 U
BROMOFORM	50	<0.50 U
BROMOMETHANE	5	<1.0 U
CARBON DISULFIDE	60	<0.50 U
CARBON TETRACHLORIDE	5	<0.50 U
CHLOROBENZENE	5	<0.50 U
CHLOROETHANE	5	<1.0 U
CHLOROFORM	7	**0.46 J**
CHLOROMETHANE	5	<1.0 U
CIS-1,2-DICHLOROETHENE	5	**3**
CIS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***
CYCLOHEXANE	NL	<0.50 U
DIBROMOCHLOROMETHANE	5	<0.50 U
DICHLORODIFLUOROMETHANE	5	**2.1 J**
ETHYLBENZENE	5	<0.50 U
ISOPROPYLBENZENE	5	<0.50 U
M- AND P-XYLENE	NL	<1.0 U
METHYL ACETATE	NL	<0.75 U
METHYL CYCLOHEXANE	NL	<0.50 U
METHYL TERT-BUTYL ETHER	10	<0.50 U
METHYLENE CHLORIDE	5	<2.5 U
O-XYLENE	NL	<0.50 U
STYRENE	5	<0.50 U
TETRACHLOROETHENE	5	<0.50 U
TOLUENE	5	<0.50 U
TRANS-1,2-DICHLOROETHENE	5	<0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***<0.50 U***
TRICHLOROETHENE	5	**68**
TRICHLOROFLUOROMETHANE	5	<1.0 U
VINYL CHLORIDE	2	<1.0 U
XYLENES, TOTAL	5	<1.5 U

TABLE 2
ANALYTICAL DATA SUMMARY FOR
WELLS SAMPLED BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION

Notes:

1 New York State Department of Environmental Conservation Division of Water Technical and Operation Guidance series (6 NYCRR 700-706, Part 703.5 summarized in TOGS 1.1.1)
Ambient water quality standards and groundwater effluent limitations, class GA; NL = Not Listed

Bold = Detected; ***Bold and Italics*** =Not detected exceeds NYS Groundwater Standards or guidance value
Yellow highlighted values exceed Groundwater Standards or guidance value

Sample type codes: N - normal environmental sample, FD - field duplicate

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
M = the matrix spike or matrix spike duplicate did not meet recovery or precision requirements.

TABLE 3
STABILIZED FIELD PARAMETERS FOR WELLS SAMPLED
BY RESOLUTION CONSULTANTS
2016 OU2 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

Well	Date	Temperature (°C)	pH	Specific Conductance (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Depth to water (ft bgs)	Flow rate (ml/min)
TT101D	12/12/2016	13.88	4.47	0.177	0.66	291.2	1.15	36.59	800
TT101D1	12/12/2016	15.31	4.66	0.111	1.05	364.6	1.03	37.69	800
TT101D2	12/12/2016	15.11	4.64	0.049	6.98	-25.3	0.57	38.43	650
RE103D1	12/5/2016	14.59	5.10	0.115	4.38	81.8	0.28	43.29	600
RE103D2	12/5/2016	14.25	4.42	39	7.27	415.4	0.42	42.98	600
RE103D3	12/5/2016	13.37	4.09	0.040	4.59	335.8	0.63	43.19	650
RE104D1	12/5/2016	12.55	4.25	0.095	4.99	354.1	0.48	39.59	600
RE104D2	12/5/2016	14.12	4.73	0.026	7.17	88.5	3.81	42.03	600
RE104D3	12/5/2016	13.91	6.64	0.023	6.3	464.1	4.12	42.58	700
RE105D1	12/12/2016	14.56	4.65	0.124	2.46	367.1	1.39	41.09	600
RE105D2	12/12/2016	14.24	4.60	0.081	5.28	-4.5	0.93	43.34	650
RE108D1	12/12/2016	14.32	4.58	0.108	7.52	6.6	0.96	44.68	600
RE108D2	12/12/2016	14.29	4.78	0.089	5.19	394.1	0.97	45.35	600
RE117D1	12/9/2016	11.72	4.46	0.032	4.04	321.70	19.6	24.69	600
RE117D2	12/9/2016	12.06	3.68	0.026	0.23	347.90	4.47	23.81	600
RE120D1	12/9/2016	14.35	4.75	0.105	3.18	382.0	1.0	39.73	500
RE120D2	12/9/2016	13.24	5.22	0.110	3.99	310.8	0.97	49.62	600
RE120D3	12/9/2016	14.66	4.09	0.026	4.06	3.6	48.1	40.02	600
RE122D1	12/8/2016	12.84	5.09	0.119	4.21	323.7	0.51	45.93	600
RE122D2	12/8/2016	13.49	4.38	0.099	5.14	406.9	0.28	46.38	600
RE122D3	12/8/2016	13.36	3.65	0.023	3.35	40.4	3.08	46.95	600
RE123D1	12/7/2016	15.78	4.29	0.121	8.79	413.7	0.44	51.14	600
RE123D2	12/7/2016	12.94	3.96	0.035	8.11	343.7	0.73	52.53	600
RE123D3	12/7/2016	15.89	5.25	0.037	0.28	-80.9	27.7	52.06	600
RE125D1	12/7/2016	13.97	4.89	0.141	0.98	-46.4	21.9	37.88	600
RE125D2	12/7/2016	14.11	5.19	0.088	2.71	291.5	4.30	39.64	600
RE125D3	12/7/2016	12.17	4.31	0.059	6.29	287.6	16.4	39.94	600
RE126D1	12/6/2016	14.66	5.28	0.099	7.64	-9.9	1.48	40.18	600
RE126D2	12/6/2016	13.44	5.29	0.107	1.86	252.2	1.21	49.97	700
RE126D3	12/6/2016	14.81	4.61	0.030	7.88	418.4	1.31	49.41	600
RE128D1	12/8/2016	13.43	4.69	0.031	0.20	220.4	688	32.87	650
RE128D2	12/8/2016	12.33	3.74	0.032	1.93	334.6	10.49	32.58	600
RE131D1	12/6/2016	13.24	4.43	0.115	2.64	10.8	0.71	39.44	550
RE131D2	12/6/2016	12.61	4.57	0.079	4.29	318.0	0.80	39.93	700
RE131D3	12/6/2016	13.63	4.34	0.037	6.42	411.8	0.50	40.30	600

°C - degrees Celsius
µS/cm - Microsiemens per Centimeter
mg/L - milligrams per liter
mV - Millivolts
NTU - Nephelometric Turbidity Unit
ft bgs - feet below ground surface
ml/min - mililiters per minute
NM - not measured

Table 4.
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Monitoring Wells BPOW 5-1 through BPOW 5-7, Fourth Quarter 2016
Operable Unit 2 (Groundwater), Bethpage, New York

Well: / Sample ID: / CONSTITUENT / Date: / Units (ug/L)	BPOW 5-1 / BPOW 5-1 / 11/2/2016	BPOW 5-2 / BPOW 5-2 / 11/2/2016	BPOW 5-3 / BPOW 5-3 / 11/2/2016	BPOW 5-4 / BPOW 5-4 / 11/3/2016	BPOW 5-5 / BPOW 5-5 / 11/1/2016	BPOW 5-6 / BPOW 5-6 / 11/1/2016	BPOW 5-7 / BPOW 5-7 / 11/9/2016
Volatile Organic Compounds (VOCs) [1]							
1,1,1-Trichloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-trichloro-1,2,2-trifluroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Butanone (MEK)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
4-methyl-2-pentanone (MIK)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Acetone	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Disulfide	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.089 J**
Carbon tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroform	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-dichloroethene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-dichloropropene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-dichloroethene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,3-dichloropropene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Xylene-o	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Xylenes - m,p	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total VOCs [2]	0	0	0	0	0	0	**0.089**
1,4-Dioxane [3]	<0.200	<0.200	**1.41**	**1.27**	**1.48**	**0.174 J**	<0.200

See last page for Notes and Abbreviations

Table 4.
Concentrations of Volatile Organic Compounds
and 1,4-Dioxane in Monitoring Wells BPOW 5-1 through BPOW 5-7,
Fourth Quarter 2016
Operable Unit 2 (Groundwater),
Bethpage, New York

Notes and Abbreviations:

(1) Samples were analyzed for the TCL VOCs using USEPA Method 524.2.

(2) Total VOCs are rounded to two significant figures.

(3) Samples were analyzed for 1,4-Dioxane using USEPA Method 522.

Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2016).

Bold	Constituent detected
TCL	Target Compound List
VOC	Volatile Organic Compound
USEPA	United States Environmental Protection Agency
µg/L	Micrograms per liter
J	Constituent value is estimated
<0.50	Constituent not detected above its laboratory detection limit

Table 5.
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Monitoring Wells BPOW 6-1 through BPOW 6-6, Fourth Quarter 2016 Operable Unit 2 (Groundwater), Bethpage, New York

CONSTITUENT Units (ug/L)	Well: Sample ID: Date:	BPOW 6-1 BPOW 6-1 12/1/2016	BPOW 6-2 BPOW 6-2 11/7/2016	BPOW 6-3 BPOW 6-3 11/10/2016	BPOW 6-4 BPOW 6-4 11/10/2016	BPOW 6-5 BPOW 6-5 11/8/2016	BPOW 6-6 BPOW 6-6 11/8/2016
Volatile Organic Compounds (VOCs) [1]							
1,1,1-Trichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-trichloro-1,2,2-trifluroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Butanone (MEK)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
4-methyl-2-pentanone (MIK)		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Acetone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Disulfide		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorobenzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroform		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-dichloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-dichloropropene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methylene Chloride		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-dichloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,3-dichloropropene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Xylene-o		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Xylenes - m,p		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total VOCs [2]		0	0	0	0	0	0
1,4-Dioxane [3]		<0.200 J	<0.200	<0.200	**0.103 J**	<0.200	<0.200

See last page for Notes and Abbreviations.

Notes and Abbreviations:

(1) Samples were analyzed for the TCL VOCs using USEPA Method 524.2.

(2) Total VOCs are rounded to two significant figures.

(3) Samples were analyzed for 1,4-Dioxane using USEPA Method 522.

Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2016).

Bold	Constituent detected
TCL	Target Compound List
VOC	Volatile Organic Compound
USEPA	United States Environmental Protection Agency
REP	Blind duplicate sample
µg/L	Micrograms per liter
J	Constituent value is estimated
<0.50	Constituent not detected above its laboratory detection limit

Table 6
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Monitoring Wells Installed by the Navy Fourth Quarter 2016, Operable Unit 2 (Groundwater) Bethpage, New York.

ARCADIS Design & Consultancy for natural and built assets

Constituent (units in µg/L)	Well: Sample ID: Date:	RE107D1 RE107D1 12/6/2016	RE107D2 RE107D2 12/6/2016	RE107D3 RE107D3 12/7/2016	RE114D1 RE114D1 11/30/2016
Volatile Organic Compounds (VOCs) [1]					
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	**0.54 J**
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluroethane		<5.0	**18.0**	**2.8 J**	**14.5**
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	**1.5**
1,1-Dichloroethane		<1.0	<1.0	<1.0	**1.3**
1,1-Dichloroethene		<1.0	**0.50 J**	<1.0	**4.1**
1,2-Dichloroethane		<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)		<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<5.0
4-methyl-2-pentanone (MIK)		<5.0	<5.0	<5.0	<5.0
Acetone		<10	<10	<10	<10
Benzene		<0.50	<0.50	<0.50	<0.50
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0
Bromoform		<1.0	<1.0	<1.0	<1.0
Bromomethane		<2.0	<2.0	<2.0	<2.0
Carbon Disulfide		<2.0	<2.0	<2.0	<2.0
Carbon tetrachloride		<1.0	<1.0	<1.0	**2.5**
Chlorobenzene		<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0
Chloroform		<1.0	<1.0	<1.0	**2.8**
Chloromethane		<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene		<1.0	**3.3**	<1.0	**4.7**
cis-1,3-dichloropropene		<1.0	<1.0	<1.0	<1.0
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	<1.0	<1.0	<1.0
Methylene Chloride		<2.0	<2.0	<2.0	<2.0
Styrene		<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		**0.98 J**	**6.1**	**0.24 J**	<1.0
Toluene		<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene		<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene		<1.0	<1.0	<1.0	<1.0
Trichloroethylene		**11.8**	**174**	**0.26 J**	**399 D**
Vinyl Chloride		<1.0	<1.0	<1.0	<1.0
Xylene-o		<1.0	<1.0	<1.0	<1.0
Xylenes - m,p		<1.0	<1.0	<1.0	<1.0
Total VOCs [2]		**13**	**202**	**3.3**	**430**
1,4-Dioxane [2][3]		**5.01**	**8.1**	<0.10	**4.34**

Notes and Abbreviations on last page.

Table 6
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Monitoring Wells Installed by the Navy Fourth Quarter 2016, Operable Unit 2 (Groundwater) Bethpage, New York.

Constituent (units in µg/L)	Well: Sample ID: Date:	RE114D2 RE114D2 11/30/2016	RE114D3 RE114D3 12/1/2016	RE118D1 RE118D1 11/28/2016	RE119D1 RE119D1 11/22/2016
Volatile Organic Compounds (VOCs) [1]					
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluroethane		**8.4**	**9.9**	<5.0	<5.0
1,1,2-Trichloroethane		**0.40 J**	<1.0	<1.0	<1.0
1,1-Dichloroethane		**0.57 J**	<1.0	<1.0	<1.0
1,1-Dichloroethene		**0.89 J**	**0.70 J**	<1.0	<1.0
1,2-Dichloroethane		<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)		<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<5.0
4-methyl-2-pentanone (MIK)		<5.0	<5.0	<5.0	<5.0
Acetone		<10	<10	<10	<10
Benzene		<0.50	<0.50	<0.50	<0.50
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0
Bromoform		<1.0	<1.0	<1.0	<1.0
Bromomethane		<2.0	<2.0	<2.0	<2.0
Carbon Disulfide		<2.0	<2.0	<2.0	<2.0
Carbon tetrachloride		<1.0	<1.0	<1.0	<1.0
Chlorobenzene		<1.0	<1.0	<1.0	<1.0
Chloroethane		<1.0	<1.0	<1.0	<1.0
Chloroform		**0.40 J**	<1.0	<1.0	<1.0
Chloromethane		<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene		**1.0**	**0.58 J**	<1.0	<1.0
cis-1,3-dichloropropene		<1.0	<1.0	<1.0	<1.0
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0
Ethylbenzene		<1.0	<1.0	<1.0	<1.0
Methylene Chloride		<2.0	<2.0	<2.0	<2.0
Styrene		<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0
Toluene		<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene		<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene		<1.0	<1.0	<1.0	<1.0
Trichloroethylene		**68.2**	**47.0**	<1.0	<1.0
Vinyl Chloride		<1.0	<1.0	<1.0	<1.0
Xylene-o		<1.0	<1.0	<1.0	<1.0
Xylenes - m,p		<1.0	<1.0	<1.0	<1.0
Total VOCs [2]		**80**	**58**	0	0
1,4-Dioxane [2][3]		**2.44**	**1.52**	<0.11	<0.11

Notes and Abbreviations on last page.

Table 6
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Monitoring Wells Installed by the Navy Fourth Quarter 2016, Operable Unit 2 (Groundwater) Bethpage, New York.

Constituent (units in µg/L)	Well: Sample ID: Date:	RE121D1 RE121D1 12/2/2016	RE121D2 RE121D2 12/2/2016
Volatile Organic Compounds (VOCs) [1]			
1,1,1-Trichloroethane		**0.35 J**	**0.47 J**
1,1,2,2-Tetrachloroethane		<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluroethane		**7.8**	**15.4**
1,1,2-Trichloroethane		<1.0	**0.59 J**
1,1-Dichloroethane		**0.25 J**	**0.69 J**
1,1-Dichloroethene		**1.9**	**3.4**
1,2-Dichloroethane		<1.0	<1.0
1,2-Dichloropropane		<1.0	<1.0
2-Butanone (MEK)		<10	<10
2-Hexanone		<5.0	<5.0
4-methyl-2-pentanone (MIK)		<5.0	<5.0
Acetone		<10	<10
Benzene		<0.50	<0.50
Bromodichloromethane		<1.0	<1.0
Bromoform		<1.0	<1.0
Bromomethane		<2.0	<2.0
Carbon Disulfide		<2.0	<2.0
Carbon tetrachloride		<1.0	**3.4**
Chlorobenzene		<1.0	<1.0
Chloroethane		<1.0	<1.0
Chloroform		**0.35 J**	**1.7**
Chloromethane		<1.0	<1.0
cis-1,2-dichloroethene		**1.1**	**2.1**
cis-1,3-dichloropropene		<1.0	<1.0
Dibromochloromethane		<1.0	<1.0
Ethylbenzene		<1.0	<1.0
Methylene Chloride		<2.0	<2.0
Styrene		<1.0	<1.0
Tetrachloroethene		<1.0	**0.34 J**
Toluene		<1.0	<1.0
trans-1,2-dichloroethene		<1.0	<1.0
trans-1,3-dichloropropene		<1.0	<1.0
Trichloroethylene		**25.8**	**591**
Vinyl Chloride		<1.0	<1.0
Xylene-o		<1.0	<1.0
Xylenes - m,p		<1.0	<1.0
Total VOCs [2]		**38**	**620**
1,4-Dioxane [2][3]		**4.06**	**2.77**

Notes and Abbreviations on last page.

Table 6
Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Monitoring Wells Installed by the Navy Fourth Quarter 2016, Operable Unit 2 (Groundwater) Bethpage, New York.

ARCADIS Design & Consultancy for natural and built assets

Notes and Abbreviations:

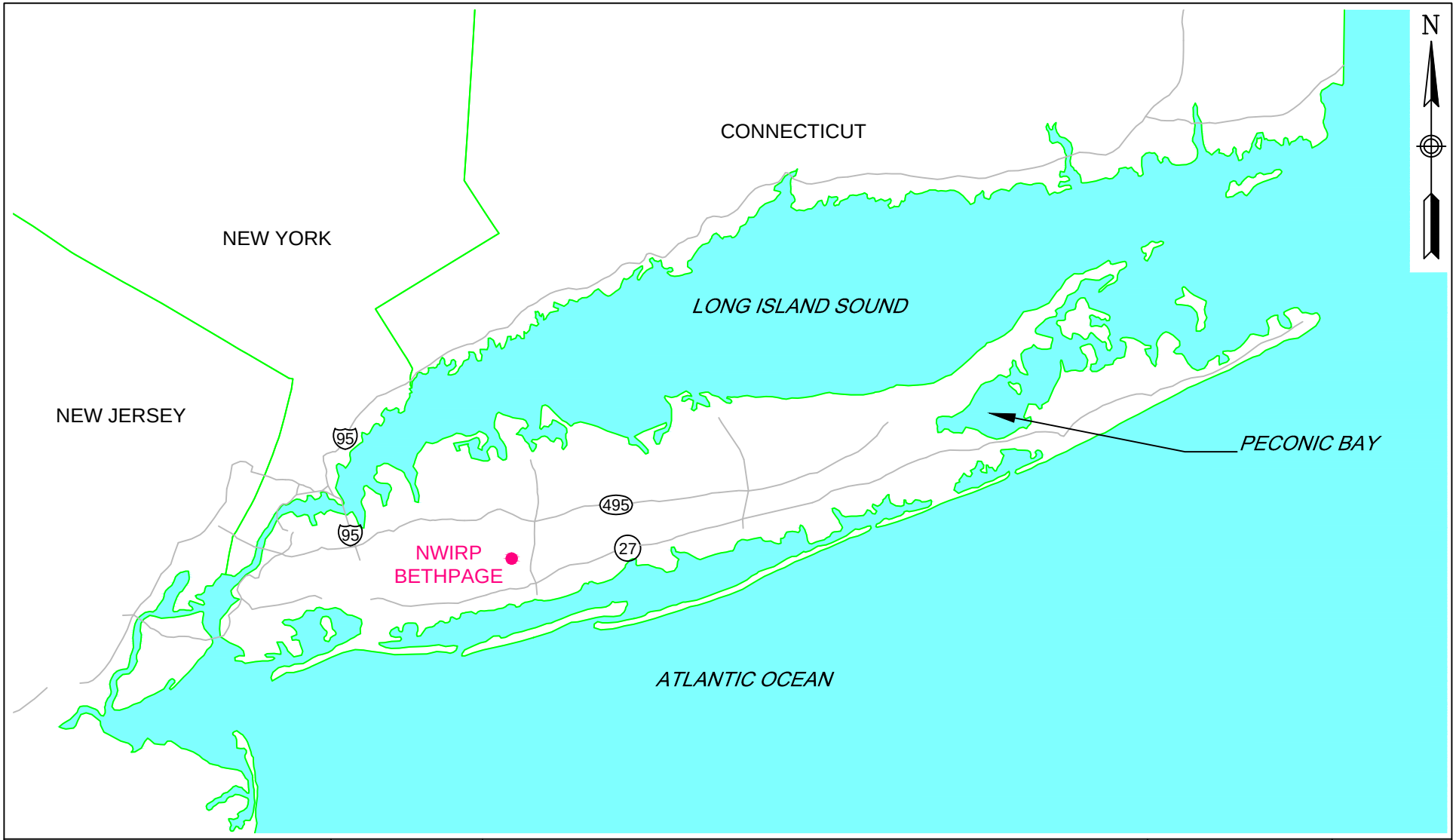
(1) Samples were analyzed for the TCL VOCs using USEPA Method 8260C.
(2) Total VOCs are rounded to two significant figures.
(3) Samples were analyzed for 1,4-Dioxane using USEPA Method 8270D SIM

Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2016).

Bold	Constituent detected
TCL	Target Compound List
SIM	Selected Ion Monitoring
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
µg/L	Micrograms per liter
D	Secondary dilution
J	Constituent value is estimated
<0.50	Compound not detected above its laboratory detection limit

Figures

112G00622\0510\112G00622CM01.DWG 08/02/10 MKB



0 15 30

SCALE IN MILES

NAVFAC

GENERAL LOCATION MAP
NWIRP BETHPAGE
BETHPAGE, NEW YORK

CONTRACT NUMBER	CTO NUMBER
N62470-11-D-8013	WE15
APPROVED BY --	DATE --
APPROVED BY --	DATE --
FIGURE NO. 1	REV 0

F:\Projects\Navy\Bethpage WXE08\7.0 Deliverables\7.2 CADD\GIS_files\BethpageMAP DOCS\MXD\MISC\2014 03 Wells Sampled\F2 GW Samples 2017 03 21.mxd

Former Northrop Grumman Site

Former Northrop Grumman Site

RE123D1 RE123D2 RE123D3

RE107D1 RE107D2 RE107D3

RE122D1 RE122D2 RE122D3

RE108D1 RE108D2

RE103D1 RE103D2 RE103D3

RE104D1 RE104D2 RE104D3

RE126D1 RE126D2 RE126D3

RE105D1 RE105D2

RE131D1 RE131D2 RE131D3

RE125D1 RE125D2 RE125D3

RE120D1 RE120D2 RE120D3

TT101D TT101D1 TT101D2

RE121D1 RE121D2

RE114D1 RE114D2 RE114D3

RE128D1 RE128D2

BPOW5-1 BPOW5-2 BPOW5-3

BPOW5-4 RE117D1 RE117D2

BPOW5-5 BPOW5-6 RE118D1

BPOW5-7 RE119D1

BPOW6-3 BPOW6-4

BPOW6-5 BPOW6-6

BPOW6-1 BPOW6-2

Old Bethpage

Bethpage

Plainedge

Levittown

North Wantagh

N

0 750 1,500 3,000 Feet

Note:
Wells outlined on this figure reflect wells installed by Resolution Consultants (RC) and sampled by RC or ARCADIS in December 2016, as documented in this report. Additional Navy-owned wells sampled by ARCADIS as part of separate and ongoing OU2 programs will be documented in the ARCADIS 2016 Annual Groundwater Monitoring Report.

Legend

- Monitoring Well - Sampled
- Monitoring Well - Unsampled
- Vertical Profile Boring
- Water Supply Well
- Extraction Well

NAVFAC

LOCATION MAP
DECEMBER 2016 GROUNDWATER SAMPLING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

CONTRACT NUMBER	CTO NUMBER
N62470-11-D8013	WE15
APPROVED BY: EV	DATE: 3/21/2017
APPROVED BY: —	DATE: —
FIGURE NO.: 2	REV: 0

Appendices

Appendix A

Groundwater Sampling Forms – Resolution Consultants

RESOLUTION CONSULTANTS

Well ID: RE10401

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage
Date: 12 / 5 / 16
Time: Start 1255 am/pm
Finish 1445 am/pm
Project No: 60266526
Site Location: Hilltop
Weather Conds: 49°F Sunny
Collector(s): JC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____ ft
b. Water Table Depth 37.5 ft
c. Length of Water Column 39.59 ft (a-b)
d. Calculated System Volume (see back) 13.1 gal.
Casing Diameter/Material 4-inch PVC
20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	57671
LaMotte	2020WE	

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1310	—	12.03	0.090	6.74	4.63	284.7	—	600	39.59	clear/none
1315	—	12.07	0.088	6.58	4.56	305.2	—	600	39.59	"
1320	—	12.16	0.088	5.80	4.60	308.1	—	600	39.59	"
1325	—	12.38	0.088	6.06	4.19	335.7	—	600	39.59	"
1330	—	12.32	0.087	5.51	4.29	331.3	—	600	39.59	"
1335	5991	12.47	0.086	5.69	4.11	346.2	—	600	39.59	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION:

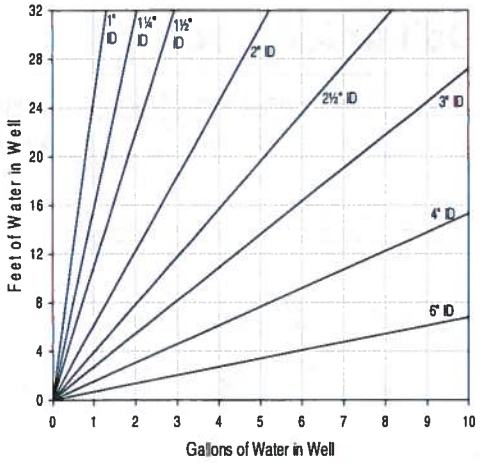
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE10401-GW-120516	40-mL vials	3	HCl	VOCs	1435
RE10401-GW-120516	1-L amber	2	none	1,4-Dioxane	1435

Comments: * DUP collected here *
DUP01-GW-120516 @ "0700"

Signature _____ Date 12/5/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1340	–	12.41	0.086	5.67	4.29	339.6	–	600	39.59	clear / none
1345	32 ~~12.38~~	12.38	0.086	5.67	4.47	333.1	–	600	39.59	"
1350	–	12.52	0.086	5.65	4.29	345.3	–	600	39.59	"
1355	–	12.49	0.086	5.17	4.17	354.1	–	600	39.59	"
1400	10	12.49	0.086	5.14	4.24	351.3	0.87	600	39.59	"
1405	–	12.50	0.086	5.12	4.21	349.2	0.89	600	39.59	"
1410	–	12.50	0.086	5.12	4.29	351.6	0.71	600	39.59	"
1415	–	12.50	0.085	5.11	4.34	350.0	0.98	600	39.59	"
1420	–	12.52	0.085	5.06	4.34	348.7	0.61	600	39.59	"
1425	–	12.56	0.086	5.00	4.38	344.8	0.57	600	39.59	"
1430	–	12.55	0.085	4.99	4.25	354.1	0.48	600	39.59	"
										"
1435										SAMPLED

RESOLUTION CONSULTANTS

Well ID: RE104 02

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 5 / 16 Time: Start 1230 am/pm
Project No: 60266526 Finish 1530 am/pm
Site Location: Hillsdale
Weather Conds: mostly sunny 43° windy Collector(s): Paul Kaveth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 42.20 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 7.35 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09F101781
LaMotte		73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1300	ON							550		
1310		14.07	0.029	6.84	5.42	92.3			42.15	
1315		14.13	0.027	5.81	5.16	93.6				
1320		14.13	0.027	5.33	5.01	88.5		600		
1325		14.11	0.027	5.66	4.99	91.5	5.85			
1330	5gal	14.14	0.026	6.48	4.98	93.5				

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

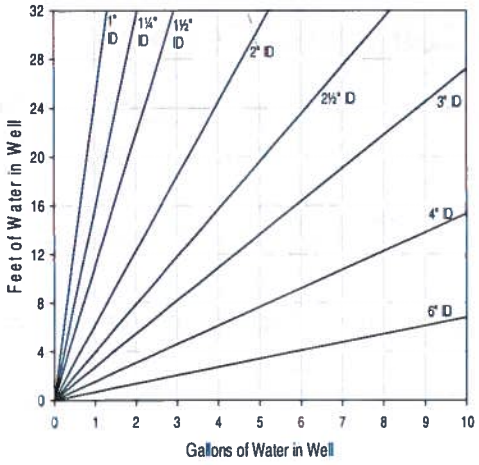
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE104 02-120516	40-mL vials	3	HCl	VOCs	1430
"	1-L amber	2	none	1,4-Dioxane	MS, MSD

Comments

Signature Paul Kaveth Date 12/5/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE10402 1300

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1335		14.14	0.026	6.61	4.95	92.9				
1340		14.15	0.026	6.72	4.93	92.6	3.11	600		
1345		14.17	0.026	6.88	4.89	85.2			42.05	
1350		14.12	0.026	6.85	4.88	83.3				
		14.11	0.026	6.96	4.85	84.6				
1400	10gal	14.10	0.026	7.03	4.80	85.1	3.29	600	42.06	
1405		14.11	0.026	7.10	4.77	85.1				
1410		14.10	0.026	7.01	4.76	89.5				
1415		14.15	0.026	7.16	4.80	85.4				
1420		14.11	0.026	7.15	4.80	84.1				
1425	15gal	14.12	0.026	7.17	4.73	88.5	3.81	600	42.03	
1430								250		Sample
1500	end									MS, MSD

RESOLUTION CONSULTANTS

Well ID: RE104 D3

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage
Date: 12 / 05 / 16
Time: Start 1300 am/pm
Finish _____ am/pm
Project No: 60266526
Site Location: Bethpage, NY
Weather Conds: 49°F, Sunny, Wind WNW 14 mph
Collector(s): F. Relf

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 42.55 ft
c. Length of Water Column _____ ft (a-b)
Casing Diameter/Material 4-inch PVC
b. Water Table Depth 7.85 ft
d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	07K100091

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1300	start time									
1315	-	14.05	.027	8.57	4.74	375.0	-	700	42.64	Clear
1320	-	14.12	0.023	7.76	4.25	393.3	-	700	42.61	Clear
1325	-	14.16	0.023	5.98	4.07	412.6	-	700	42.61	Clear
1330	-	14.16	0.023	6.18	4.08	422.1	6.76	700	42.60	Clear
1335	5 Gal	14.15	0.023	6.19	4.09	420.7	-	700	42.60	Clear

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

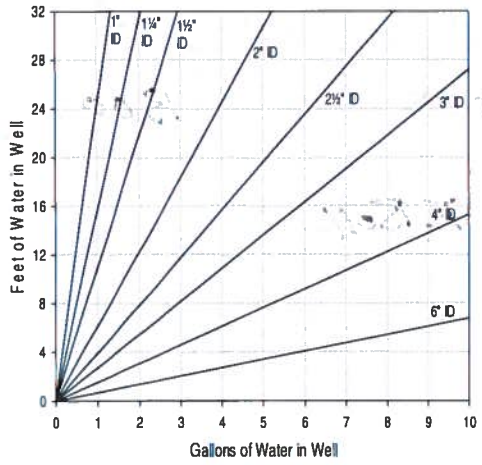
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE104D3-GW-120516	40-mL vials	3	HCl	VOCs	1420
RE104D3-GW-120516	1-L amber	2	none	1,4-Dioxane	

Comments

Signature _____ Date 12-05-16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1340	–	14.12	0.023	6.22	4.04	424.5	3.58	700	42.61	
1345	–	14.05	0.023	6.26	3.87	438.7	–	700	42.60	
1350	–	14.02	0.023	6.27	3.90	458.4	–	700	42.60	Clear
1355	10 gal	13.95	0.023	6.28	3.72	450.8	3.67	700	42.62	Clear
1400	–	13.95	0.023	6.30	3.73	453.4	–	700	42.60	
1405	–	13.89	0.023	6.31	3.70	456.2	3.97	700	42.59	Clear
1410	–	13.93	0.023	6.29	3.66	459.4	4.24	700	42.58	Clear
1415	13.5	13.91	0.023	6.30	6.64	464.1	4.10	706	42.58	Clear
Sampling 1420										

RESOLUTION CONSULTANTS

Well ID: RC10301

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/5/16 Time: Start 910 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Avoca & Hortin
Weather Conds: cloudy, drizzle 42° Collector(s): Paul Kraeuth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 64.5 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 43.07 ft d. Calculated System Volume (see back) 9.8 gal. 15 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09F101780

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
920	ON							600		
940		14.50	0.112	3.83	5.55	83.0		600	43.20	
945		14.56	0.113	4.19	5.46	80.5	0.20	600		
950		14.47	0.114	4.72	5.35	76.0				
955		14.53	0.114	4.81	5.27	70.7				
1000	5gal	14.55	0.114	4.52	5.20	71.3			43.26	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

(continued on back)

If no or N/A - Explain below.

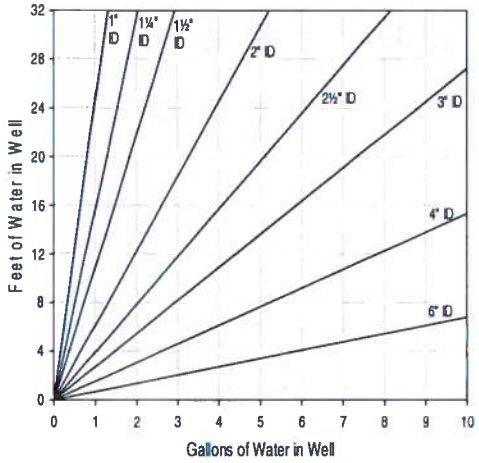
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RC10301-GW-120516	40-mL vials	3	HCl	VOCs	1025
	1-L amber	2	none	1,4-Dioxane	1025

Comments

Signature Paul Kraeuth Date 12/5/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE103 DI @920

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1005		14.60	0.114	4.43	5.19	70.4	056	600		
1010		14.62	0.114	4.40	5.18	76.1				
1015		14.60	0.115	4.38	5.13	83.0	0.28		43.29	
1020	10 gal	14.59	0.115	4.38	5.10	81.8				
1025								200		Simple
1040								Grab		

RESOLUTION CONSULTANTS

Well ID: RE103 DZ

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12 / 5 / 16 | Time: Start 930 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: Aroca + Martin
Weather Conds: 43°F cloudy | Collector(s): SC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 623 ft | c. Length of Water Column ____ ft (a-b) | Casing Diameter/Material 4-inch PVC

b. Water Table Depth 42.94 ft | d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3% | - Turbidity ± 10% | - D.O. ± 10% (values >0.5 mg/L)
- pH ± 0.1 unit | - ORP ± 10mV | Remove a minimum 1 screen volume
- Conductivity ± 3% | - Drawdown < 0.3'

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	54965
Lamotte	2020WE	73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
945	-	14.09	39	11.76	5.44	330.0	0.45	600	42.98	clear/none
950	-	14.15	40	6.69	5.09	343.0	-	600	"	"
955	-	14.28	41	4.34	4.93	350.1	0.29	600	"	"
1000	-	14.32	45	4.49	5.24	351.5	-	600	42.97	"
1005	-	14.38	48	6.38	4.85	360.5	0.31	600	42.98	"
1010	5	14.32	45	6.94	4.74	371.7	-	600	"	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION:

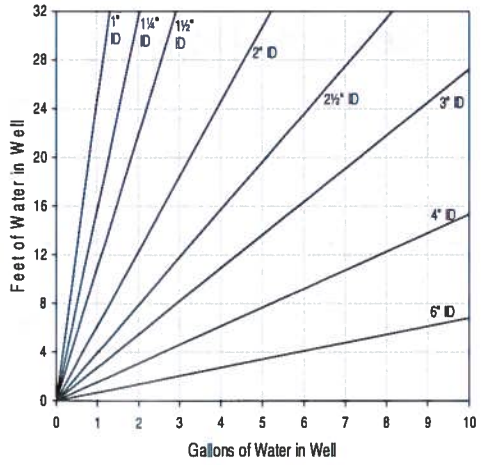
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE103DZ-GW-120516	40-mL vials	3	HCl	VOCs	1100
RE103DZ-GW-120516	1-L amber	2	none	1,4-Dioxane	1100

Comments

Signature [signature] Date 12/5/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1015	–	14.34	43	7.07	4.70	379.2	0.35	600	42.98	clear/none
1020	–	14.37	42	7.10	4.67	383.4	–	600	"	"
1030	–	14.41	40	7.17	4.60	395.4	0.21	600	"	"
1040	10	14.38	40	7.21	4.57	398.4	0.82	600	"	"
1045	–	14.20	39	7.20	4.45	409.6	–	600	"	"
1050		14.19	38	7.27	4.46	411.3	–	600	"	"
1055	13	14.25	39	7.27	4.42	415.4	0.42	600	"	"
1100										SAMPLE.

RESOLUTION CONSULTANTS

Well ID: RE10303

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/5/16 Time: Start 0930 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Avoca Ave, Martin Pl
Weather Conds: 48°-35°F, Cloudy, Humidity 92%, Wind WSW 9mph Collector(s): F. Bell

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 735 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 43.04 ft d. Calculated System Volume (see back) 10 gal. 10 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	08K100392
La Motte	2020 we	3754-4013

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
0930	Start									
0945	—	13.37	0.039	4.01	4.28	279.5	0.41	650	43.15	clear
0950	—	13.36	0.041	4.06	4.18	278.5	—	650	43.15	clear
0955	5 Gal	13.36	0.042	4.83	4.19	270.4	0.77	650	43.15	clear
1000	—	13.40	0.041	4.99	4.14	302.8	0.57	650	43.16	clear
1005	—	13.34	0.041	4.95	4.10	309.9	0.61	650	43.17	clear

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

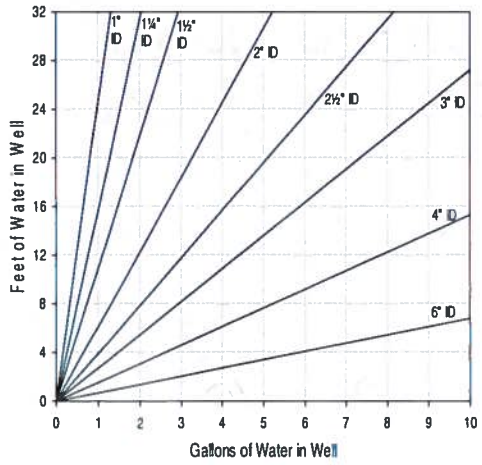
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE10303-GW-120516	40-mL vials	3	HCl	VOCs	1030
RE10303-GW-120516	1-L amber	2	none	1,4-Dioxane	1030

Comments _____

Signature _____ Date _____

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1010	–	13.33	0.041	4.89	4.05	324.1	0.61	650	43.17	
1015	–	13.35	0.040	4.69	4.08	325.3	0.68	650	43.18	
1020	–	13.35	0.040	4.57	4.07	333.5	0.67	650	43.18	clear
1025	10 Gal	13.37	0.040	4.59	4.09	335.8	0.63	650	43.19	
1030	Sample									

RESOLUTION CONSULTANTS

Well ID: RE131D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage
Project No: 60266526
Site Location: RE131 Series
Weather Conds: 35°F sunny

Date: 12/6/16
Time: Start 835 am/pm
Finish 1045 am/pm
Collector(s): JC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 455 ft
b. Water Table Depth 39.44 ft
c. Length of Water Column _____ ft (a-b)
d. Calculated System Volume (see back) 13.1 gal.

Casing Diameter/Material: 4-inch PVC
~~131~~ 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	US8945X
LaMotte	2020WE	

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
855	–	12.97	0.110	6.11	5.60	49.6	–	550	39.44	clear /none
900	–	12.97	0.111	5.22	5.47	40.6	–	550	39.44	"
905	–	13.17	0.115	3.71	4.70	33.0	1.46	550	39.44	"
910	–	13.14	0.115	3.70	4.61	30.9	–	550	39.44	"
915	–	13.12	0.115	3.68	4.53	27.5	3.01	550	39.44	"
920	–	13.18	0.115	3.49	4.48	24.1	–	550	39.44	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

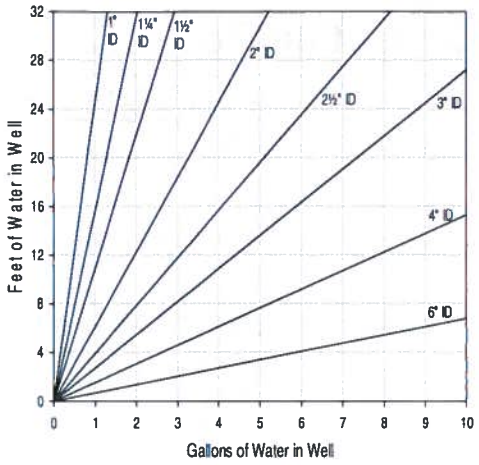
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE131D1-GW-120616	40-mL vials	3	HCl	VOCs	1030
RE131D1-GW-120616	1-L amber	2	none	1,4-Dioxane	1030

Comments

Signature _____ Date 12/6/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
925	—	13.29	0.115	3.37	4.48	20.7	-	550	39.44	clear / none
930	-	13.57	0.115	3.28	4.48	18.3	-	550	39.44	"
935	-	13.08	0.115	3.26	4.41	19.5	0.74	550	39.44	"
940	—	13.07	0.115	2.76	4.46	16.7	-	550	39.44	"
1005	—	13.22	0.115	2.77	4.47	12.3	-	-	-	"
1010	—	13.21	0.115	2.72	4.46	11.8	-	-	-	"
1015	—	13.07	0.115	2.75	4.42	13.6	0.55	550	39.44	"
1020	-	13.20	0.115	2.67	4.43	11.3	-	550	39.44	"
1025	13.5	13.29	0.115	2.64	4.43	10.8	0.71	550	39.44	"
1030										SAMPLE

RESOLUTION CONSULTANTS

Well ID: RE131 D2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage
Project No: 60266526
Site Location: Bethpage, NY
Weather Conds:
Date: 12/06/16
Time: Start 0830 am/pm
Finish ____ am/pm
Collector(s): F. Bell

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 595 ft
b. Water Table Depth 39.90 ft
c. Length of Water Column ____ ft (a-b)
d. Calculated System Volume (see back) 16.3 gal.
Casing Diameter/Material: 4-inch PVC
25 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	08K100592

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
Start	time	0830								
0855	-	12.62	0.083	6.24	3.87	313.2	-	600	39.90	clear
0900	-	12.64	0.084	6.27	4.02	312.4	-	600	39.91	clear
0905	5 Gal	12.67	0.084	6.29	4.31	302.0	-	600	39.93	Clear
0910	-	12.66	0.083	5.21	4.39	300.1	0.75	700	39.93	clear
0915	-	12.65	0.083	5.05	4.42	292.1	-	700	39.91	clear

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

3. SAMPLE COLLECTION:

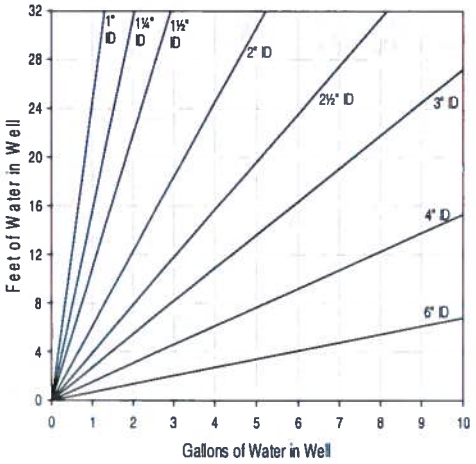
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE131 D2-GW-120616	40-mL vials	3	HCl	VOCs	1020
RE131 D2-GW-120616	1-L amber	2	none	1,4-Dioxane	1020

Comments: Sampled VOC @ 175 mL/min flow rate

Signature: [signature]
Date: 12/06/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
0920	—	12.67	0.082	4.92	3.03	351.8	0.86	700	39.91	Clear
0925	—	12.68	0.081	4.82	3.26	347.2	—	700	39.92	Clear
0930	—	12.70	0.081	4.73	3.46	335.4	—	700	39.92	Clear
0930	10 Gal	12.61	0.080	4.61	4.53	284.0	0.84	700	39.93	
0935	—	12.60	0.080	4.49	4.52	292.3	—	700	39.93	Clear
0940		12.61	0.080	4.41	4.54	299.6	—	700	39.92	
0950		12.60	0.079	4.39	4.55	299.7	—	700	39.93	
0955	15 Gal	12.61	0.079	4.37	4.56	306.7	—	700	39.93	Clear
1000	15 Gal	12.60	0.079	4.33	4.55	316.2	0.77	700	39.92	Clear
1005	16 Gal	12.61	0.079	4.29	4.57	318.0	0.80	700	39.93	Clear
Duplicate		time	1020							

RESOLUTION CONSULTANTS

Well ID: RE131D3

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/6/16 Time: Start 830 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Oriole
Weather Conds: 35° sunny Collector(s): Paul Kaneth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 685 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 403.1 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	07K100291
	LaMotte		73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
840	ON							550		
855		13.42	0.041	5.65	5.25	293.8			40.28	
900		13.53	0.039	5.79	4.93	325.1	3.85			
905		13.60	0.038	6.23	4.69	349.0		600		
910		13.62	0.038	6.33	4.61	364.8			40.30	
915	5gal	13.61	0.038	6.36	4.60	368.0				

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

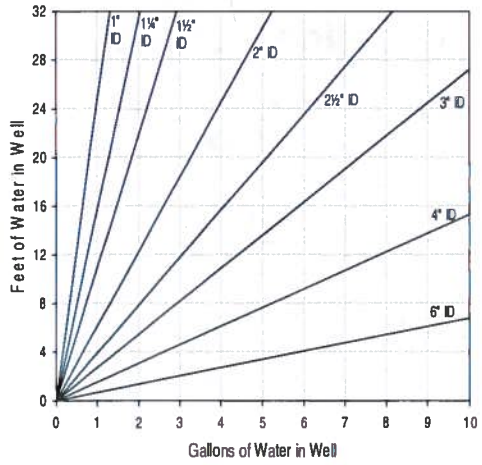
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE131D3-GW-120616	40-mL vials	3	HCl	VOCs	1010
	1-L amber	2	none	1,4-Dioxane	

Comments

Signature Paul Kaneth Date 12/6/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: REB103- @ 840

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
920		13.68	0.038	3.34	4.58	374.6				
925		13.76	0.038	6.32	4.55	381.9	0.38		40.29	
930		13.75	0.038	6.35	4.55	385.3				
935		13.60	0.037	6.35	4.54	389.8		600		
940	10gal	13.45	0.037	6.38	4.42	403.0				
945		13.49	0.037	6.47	4.39	404.3				
950		13.58	0.037	6.42	4.36	406.6	0.50	600	40.30	
955		13.54	0.037	6.43	4.35	408.9				
1000	13gal	13.63	0.037	6.42	4.34	411.8				
1010								150		sample
1055	end									

RESOLUTION CONSULTANTS

Well ID: RE126D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/6/16 Time: Start 1220 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Lynn
Weather Conds: cloudy 45° Collector(s): Paul Kaucth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 525 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 496 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09F101780
LaMotte	2020	73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1240	ON							600		
1250		14.92	0.099	9.20	5.70	6.9				
1255		14.86	0.099	8.14	5.51	-2.9			49.27	
1300		14.84	0.099	8.01	550	-4.3	4.17			
1305	5gal	14.71	0.099	7.74	5.47	-6.6		600		
1310		14.86	0.099	7.80	5.48	-10.7	2.05			

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

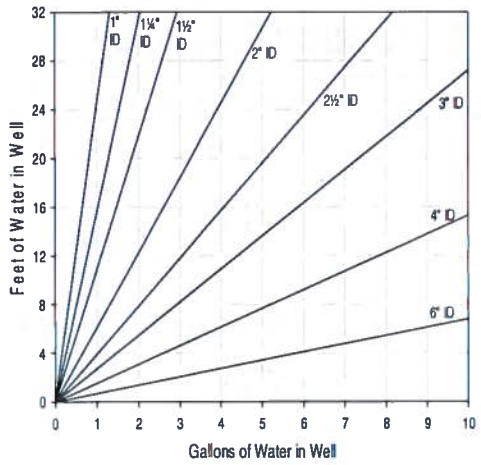
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE126D1-GW-120616	40-mL vials	3	HCl	VOCs	1400
RE126D1-GW-120616	1-L amber	2	none	1,4-Dioxane	

Comments

Signature Paul Kaucth Date 12/6/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE12601 @ 12:40

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1315		14.82	0.099	7.62	5.43	-11.8			49.25	
1320		14.78	0.099	7.69	5.39	-11.4				
1325		14.75	0.099	7.63	5.38	-11.0	1.55		49.21	
1330		14.80	0.099	7.63	5.39	-11.7				
1335	10gal	14.78	0.099	7.67	5.38	-12.1		600	49.20	
1340		14.66	0.099	7.60	5.35	-12.4	1.61			
1345		14.52	0.099	7.65	5.28	-9.7				
1350	13gal	14.66	0.099	7.64	5.28	-9.9	1.48	600	40.18	
1400								200		Sample

RESOLUTION CONSULTANTS

Well ID: RE126D2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/ 6 /16 Time: Start 1240 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Lynn Pl
Weather Conds: 45°F Cloudy Collector(s): JC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 580 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 49.97 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	57671
LaMotte	2020 WE	

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1255	—	12.71	0.108	6.25	5.61	217.2	0.56	400	49.97	clear/ none
1300	—	13.90	0.112	3.78	5.47	226.2	—	700	49.97	"
1305	—	13.72	0.110	2.57	5.36	239.4	0.53	700	49.97	"
1310	—	13.74	0.112	1.83	5.36	245.9	—	700	49.97	"
1315	—	13.78	0.113	1.37	5.38	244.7	0.56	700	49.97	"
1320	5 gal	13.69	0.110	1.24	5.35	248.0	—	700	49.97	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

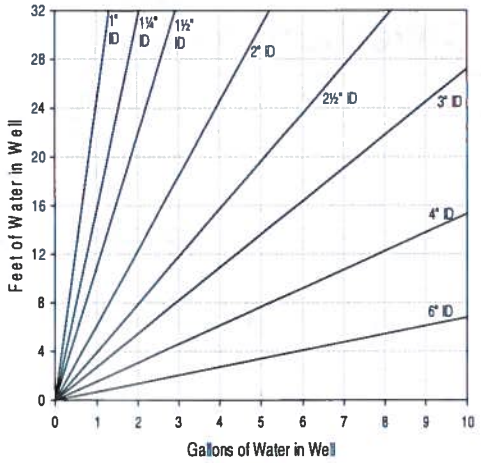
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE126D2-GW-120616	40-mL vials	3	HCl	VOCs	1410
RE126D2-GW-120616	1-L amber	2	none	1,4-Dioxane	1410

Comments

Signature _____ Date 12/6/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1325	-	13.73	0.111	1.50	5.36	248.8	1.88	700	49.97	clear / none
1330	-	13.54	0.111	1.34	5.33	250.8	-	700	49.97	"
1335	-	13.57	0.110	1.47	5.33	252.3	1.04	700	49.97	"
1345	10 gal	13.42	0.107	1.62	5.30	251.2	-	700	49.97	"
1350	-	13.50	0.108	1.72	5.34	249.3	1.21	700	49.97	"
1355	-	13.50	0.108	1.74	5.32	249.8	-	700	49.97	"
1400	-	13.38	0.108	1.77	5.27	252.6	-	700	49.97	"
1405	13.5 gal	13.44	0.107	1.86	5.29	252.2	-	700	49.97	"
1410	-	-	-	-	-	-	-	-	-	SAMPLE

RESOLUTION CONSULTANTS

Well ID: RE126D3

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12/06/16 | Time: Start 12:35 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: Bethpage, NY
Weather Conds: 45°F Cloudy, Wind ENE 6 mph | Collector(s): T. Bell

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 665 ft | c. Length of Water Column ____ ft (a-b) | Casing Diameter/Material 4-inch PVC
b. Water Table Depth 49.51 ft | d. Calculated System Volume (see back) 131 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)
- Temperature ± 3% | - Turbidity ± 10% | - D.O. ± 10% (values >0.5 mg/L)
- pH ± 0.1 unit | - ORP ± 10mV | Remove a minimum 1 screen volume
- Conductivity ± 3% | - Drawdown < 0.3'

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09K100291

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
Δ	start	12:35								
1255	-	15.10	0.037	5.85	5.22	326.6	-	600	49.58	Clear
1300	-	15.13	0.036	5.63	5.11	335.0	0.86	600	49.55	clear
1305	-	15.03	0.036	5.86	5.00	347.2	0.76	600	49.53	clear
1310	-	15.15	0.038	6.58	4.84	362.6	-	600	49.52	clear
1315	5 Gal	15.08	0.031	7.08	4.80	371.3	-	600	-	Clear

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

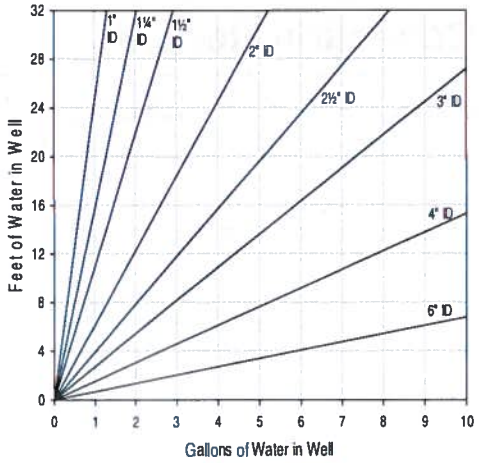
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE126D3-GW-120616	40-mL vials	3	HCl	VOCs	1415
RE126D3-GW-120616	1-L amber	2	none	1,4-Dioxane	1415

Comments

Signature ____ Date ____

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1320	–	15.06	0.030	7.36	4.74	376.2	–	600	–	
1325	–	15.09	0.030	7.19	4.71	385.9	–	600	49.50	Clear
1330	–	14.97	0.030	7.11	4.66	393.2	1.60	600	49.49	Clear
1335	–	14.89	0.030	7.93	4.58	404.8	–	600	49.48	Clear
1340	–	14.88	0.030	7.91	4.51	410.1	–	600	49.45	
1345	–	14.87	0.030	7.84	4.49	415.7	–	600	49.44	
1350	10 Gal	14.87	0.030	7.85	4.44	417.5	1.33	600	49.43	Clear
1355	–	14.78	0.030	7.83	4.57	414.5	–	600	49.41	Clear
1400	–	14.69	0.030	7.91	4.58	416.0	1.27	600	49.42	
1405	1.35 Gall	14.81	0.030	7.88	4.61	418.4	1.31	600	49.41	Clear
Sample time 1415										

RESOLUTION CONSULTANTS

Well ID: RE125D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/7/16 Time: Start 745 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Diane
Weather Conds: cloudy 40°, wet from overnight rain Collector(s): Paul Kaneth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 345 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 37.81 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	09F101780
	LaMotte	2020	73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
845	ON									
900		13.98	0.147	2.49	5.23	-8.7		600	37.90	
905		14.01	0.146	1.79	5.12	-25.0				
910		14.02	0.146	1.72	5.10	-28.8	18.7			
915		13.95	0.145	1.56	5.07	-32.9			37.91	
920	5gal	14.01	0.145	1.44	5.04	-35.1	19.5			

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

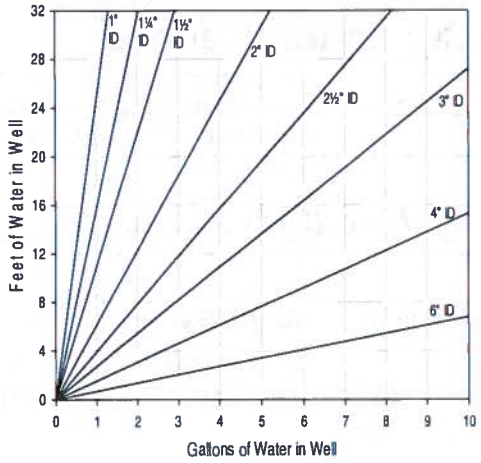
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE125D1-GW-120716	40-mL vials	3	HCl	VOCs	1010
	1-L amber	2	none	1,4-Dioxane	

Comments

Signature Paul Kaneth Date 12/7/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE25501 @940

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
925		14.02	0.144	1.34	5.02	~~-38.2~~	23.8	600	37.92	
930		13.98	0.144	1.30	5.00	-39.8	26.4			
935		13.95	0.143	1.19	4.95	-40.8	24.3			
940	10 gal	14.02	0.142	1.09	4.95	-43.2				
945		13.97	0.142	1.09	4.94	-44.4	20.8	600	37.87	
950	~~950~~	14.02	0.142	1.03	4.90	-43.6	22.8			
955		13.91	0.141	1.02	4.89	-44.2	22.9			
1000	13 gal	13.97	0.141	0.98	4.89	-46.4	21.9		37.88	
1010								150		Sample

RESOLUTION CONSULTANTS

Well ID: RE125D2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12/7/16 | Time: Start 745 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: Nimitz
Weather Conds: 42°F Cloudy | Collector(s): JC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 605 ft | c. Length of Water Column ____ ft (a-b) | Casing Diameter/Material 4-inch PVC
b. Water Table Depth 39.60 ft | d. Calculated System Volume (see back) ~~20~~ 13.1 gal. | 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)
- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)
Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	54965
LaMotte	2020WE	77567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
855	ON							600		
910	–	14.16	0.088	5.16	5.28	272.3	7.29	600	39.64	cloudy / iron
920	–	14.15	0.090	3.15	5.32	272.4	–	600	39.64	"
930	5	14.11	0.091	2.94	5.28	280.2	5.09	600	39.64	"
940	–	14.18	0.090	3.03	5.15	287.6	4.08	600	39.64	"
950	–	14.16	0.090	2.83	5.25	283.5	4.02	600	39.64	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

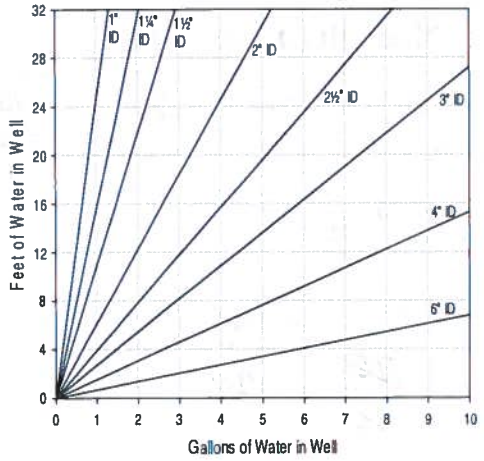
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE125D2-GW-120716	40-mL vials	3	HCl	VOCs	1020
RE125D2-GW-120716	1-L amber	2	none	1,4-Dioxane	1020

Comments

Signature [signature] Date 12/7/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume
(4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1000	10gal	14.11	0.089	2.69	5.24	285.0	4.40	600	39.64	clear/none
1005	-	14.10	0.089	2.67	5.21	287.5	-	600	39.64	"
1010	-	14.09	0.089	2.68	5.20	288.4	-	600	39.64	"
1015	13.1	14.11	0.088	2.71	5.19	291.5	4.30	600	39.64	"
1020	-	-	-	-	-	-	-	-	-	SAMPLE

RESOLUTION CONSULTANTS

Well ID: RE12503

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 7 / 16 Time: Start 745 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Diane
Weather Conds: cloudy 40°, wet from overnight rain Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 695 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 39.73 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	08K1CO392

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
Start 745										
915	-	10.78	0.066	8.66	4.60	211.8	30.2	350	39.83	Cloudy
920	-	10.85	0.066	8.37	4.59	211.5	-	350	39.83	Cloudy
925	-	10.97	0.065	7.63	3.84	264.1	27.6	325	39.83	✓
930	-	11.06	0.064	6.97	3.45	275.2	-	-	39.84	
935	-	11.21	0.063	6.71	3.46	271.3	-	-	39.84	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

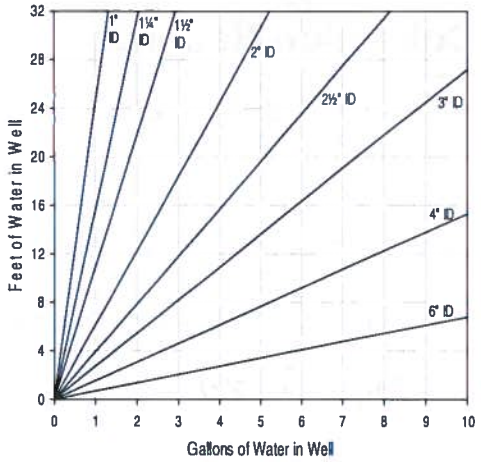
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
	40-mL vials	3	HCl	VOCs	1100
	1-L amber	2	none	1,4-Dioxane	1110

Comments: Flow rate while sampling 150 ml/min

Signature _____ Date 12-7-16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
940	–	11.31	0.060	6.54	3.49	270.1	63.6	325	39.86	
945	–	11.34	0.061	6.42	3.58	266.9	–	325	39.86	
0950	–	11.35	0.061	6.37	3.68	263.8	44.1	325	39.86	
0955	–	11.35	0.060	6.43	3.58	269.9	–	325	39.87	
1000	5 Gal	11.28	0.060	6.34	3.59	265.9	30.3	325	39.87	cloudy / none
1005	–	11.34	0.059	6.40	4.51	220.3	–	300	39.88	
1010	–	11.05	0.058	6.31	4.42	244.3	21.3	250	39.89	
1015	–	11.79	0.059	6.27	4.30	260.4	–	600	39.90	Aled out mp10
1020	–	11.85	0.059	6.34	4.20	270.2	–	600	39.90	
1025	–	11.95	0.059	6.43	4.10	278.9	15.9	600	39.90	
1050	–	12.08	0.059	6.34	4.18	277.8	18.8	600	39.91	
1035	–	12.09	0.059	6.24	3.94	285.5	–	600	39.92	
1040	10 Gal	12.18	0.059	6.19	3.95	285.5	17.7	600	39.92	
1045	–	12.27	0.059	6.26	3.63	290.1	18.3	600	39.92	
1050	–	12.28	0.059	6.28	4.31	285.9	17.2	600	39.93	
1055	–	12.22	0.059	6.25	4.36	290.1	16.8	600	39.93	
1100	13.5	12.17	0.059	6.29	4.31	287.6	16.4	600	39.94	
1110	Sample									

RESOLUTION CONSULTANTS

Well ID: RE123D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12 / 7 / 16 | Time: Start 1240 am/pm Finish ____ am/pm

Project No: 60266526

Site Location: MTA Yard

Weather Conds: 45°F cloudy | Collector(s): JC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 505 ft | c. Length of Water Column ____ ft (a-b) | Casing Diameter/Material 4-inch PVC

b. Water Table Depth 51.12 ft | d. Calculated System Volume (see back) 13.1 gal. | 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	54965
LaMotte	2020 WE	

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1300	—	15.04	0.112	7.71	5.23	321.1	1.71	600	51.14	clear/none
1310	—	15.72	0.120	8.88	4.52	363.2	—	600	51.14	"
1320	5 gal	15.74	0.119	8.74	4.46	379.1	1.10	600	51.14	"
1330	—	15.86	0.120	8.76	4.41	390.6	—	600	51.14	"
1340	—	15.79	0.120	8.71	4.36	399.8	0.35	600	51.14	"
1345	10 gal	15.81	0.121	8.70	4.34	402.3	—	600	51.14	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

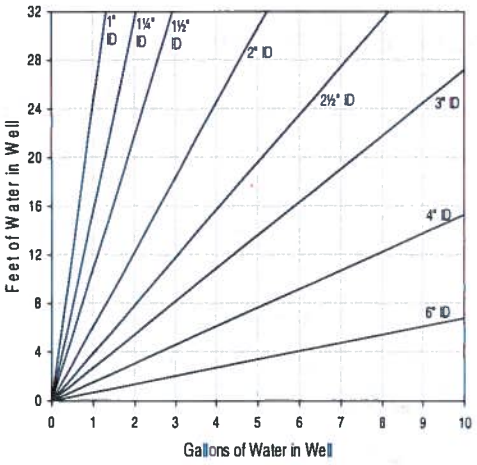
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE123D1-GW-120716	40-mL vials	3	HCl	VOCs	1410
RE123D1-GW-120716	1-L amber	2	none	1,4-Dioxane	1410

Comments

Signature _____ Date 12/7/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE1231D1

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1350	~~40~~ 32	15.88	0.121	8.73	4.33	404.7	0.29	600	51.14	clear / none
1355	—	15.87	0.121	8.68	4.34	407.8	—	600	51.14	"
1400	—	15.82	0.121	8.69	4.33	409.9	0.44	600	51.14	"
1405	13.5	15.78	0.121	8.79	4.29	413.7	—	600	51.14	"
								~~600~~		
1410	—	—	—	—	—	—	—	—	—	SAMPLE

RESOLUTION CONSULTANTS

Well ID: RE12302

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/ 7 /16 Time: Start 12.45 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: MTA yard
Weather Conds: 41/4 °F. Cloudy, Wind WNW 3mph, 83% Humidity Collector(s): T. Bell

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 660 ft c. Length of Water Column 607.51 ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 52.49 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	08K100392

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1245	Start	time								
1305	-	12.95	0.036	5.34	3.97	316.7	0.63	600	52.52	clear
1310	-	12.94	0.041	5.95	4.24	322.8	-	600	52.53	clear
1315	-	12.93	0.036	7.75	3.99	322.7	0.95	600	52.52	clear
1320	-	13.00	0.036	7.90	4.00	327.1	-	600	52.52	clear
1325	5Gal	12.94	0.035	8.06	3.97	338.1	0.84	600	52.53	clear

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION:

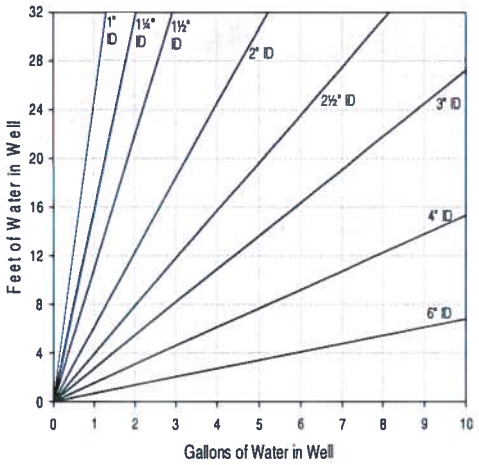
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE123D2-GW-120716	40-mL vials	3	HCl	VOCs	1415
RE123D2-GW-120716	1-L amber	2	none	1,4-Dioxane	1415

Comments

Signature _____ Date 12-07-16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1330	–	13.05	0.035	8.06	4.04	334.1	–	600	52.53	
1335	–	12.97	0.035	8.04	4.00	343.7	0.72	600	52.53	
1340	–	12.97	0.035	8.07	3.99	343.5	–	600	52.52	
1345	–	12.99	0.035	8.07	3.98	345.1	–	600	52.52	clear
1350	10 Gal	13.01	0.035	8.06	3.95	348.0	–	600	52.52	clear
1355	–	12.96	0.035	8.04	3.99	344.7	0.79	600	52.52	clear
1400	–	13.00	0.035	8.09	4.00	346.5	0.75	600	52.53	clear
1405	–	12.98	0.035	8.09	3.98	347.6	0.71	600	52.53	clear
1410	13.5 Gal	12.94	0.035	8.11	3.96	343.7	0.73	600	52.53	clear
1415	Sample									

RESOLUTION CONSULTANTS

Well ID: RE12303

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12/7/16 | Time: Start 1215 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: MTA Yard
Weather Conds: cloudy 44° | Collector(s): Paul Kaveth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 840 ft | c. Length of Water Column 51.94 ft (a-b) | Casing Diameter/Material 4-inch PVC
b. Water Table Depth ~~840~~ ft | d. Calculated System Volume (see back) 13.1 gal. | 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	09F101780
	LaMotte	2020	73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1240								600		
1250		15.66	0.034	1.87	5.51	-48.6			52.03	
1255		15.81	0.034	1.24	5.49	-61.1	12.6			
1300		15.88	0.034	0.91	5.40	-66.5		600		
1305		15.86	0.035	0.65	5.39	-70.4			52.04	
1310	5 gal	15.84	0.041	0.56	5.53	-70.4				

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

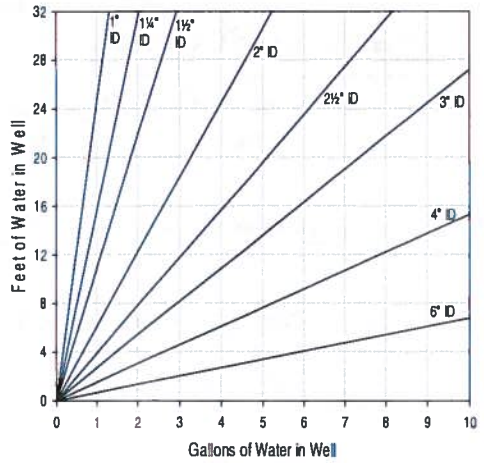
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE12303-60-120716	40-mL vials	3	HCl	VOCs	1400
	1-L amber	2	none	1,4-Dioxane	

Comments

Signature Paul Kaveth Date 12/7/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE12303

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1315		15.77	0.043	0.49	5.54	-71.0	30.2		52.04	
1320		15.83	0.043	0.44	5.53	-73.8	30.1			
1325		15.94	0.042	0.41	5.51	-76.4	32.2	600		
1330		15.87	0.041	0.40	5.45	-78.2	31.1		52.04	
1335	10gal	15.88	0.041	0.35	5.42	-78.8	31.2			
1340		15.88	0.039	0.35	5.36	-79.4	29.5	600		
1345		15.89	0.038	0.33	5.34	-81.4	30.0			
1350		15.96	0.038	0.31	5.30	-81.5	28.8		52.06	
1355	13gal	15.89	0.037	0.28	5.25	-80.9	27.7			
1400										Sample

RESOLUTION CONSULTANTS

Well ID: RE12801

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 8 / 16 Time: Start 930 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Service Rd, by N Virginia
Weather Conds: Cloudy 40° Collector(s): Paul Kaveth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 685 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 33.73 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	07K100291
LaMotte	2020	73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
845	ON						~~600~~	600		cloudy
855		13.26	0.045	1.45	5.38	188.9	99		32.85	
900		13.29	0.041	0.97	5.10	196.8				
905		13.30	0.038	0.88	4.92	207.7	96.0	650	32.86	
910		13.34	0.033	0.65	4.83	212.5				
915	5gal	13.30	0.032	0.68	4.57	229.4	75			

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

(continued on back)

If no or N/A - Explain below.

Turbidity was very high but stable

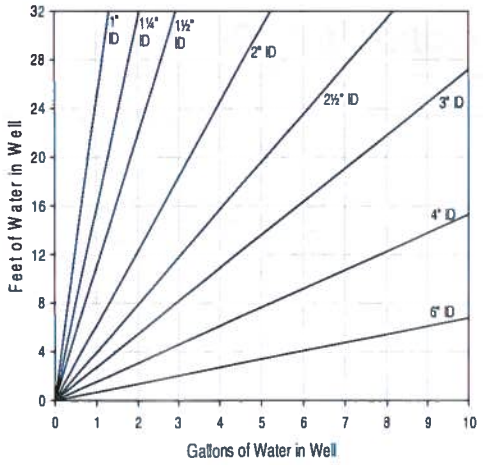
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE12801	40-mL vials	3	HCl	VOCs	1030
	1-L amber	2	none	1,4-Dioxane	

Comments: hit bottom with pump, tubing

Signature: Paul Kaveth Date: 12/8/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE 128 D1 845

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
920		13.34	0.032	0.48	4.84	211.0	86.4	650	32.85	
925		13.37	0.032	0.41	4.84	211.5	106.0			
930		13.40	0.032	0.37	4.82	213.8	NR			
935		13.38	0.031	0.35	4.81	214.9	NR	650	32.86	
940	10gal	13.40	0.031	0.45	4.72	224.1	NR			
945		13.41	0.031	0.31	4.69	234.8	606			
950		13.43	0.031	0.29	4.67	235.4	641		32.86	
955		13.41	0.031	0.25	4.65	235.1	620			
1000		13.41	0.031	0.27	4.67	234.2	NR	650		
1005	15gal	13.44	0.031	0.26	4.61	236.2	NR		32.87	
1010		13.42	0.031	0.24	4.62	230.1	NR			
1015		13.34	0.031	0.23	4.60	228.6	643 NU			drain silt from flowcell
1020		13.46	0.031	0.18	4.67	223.4	663 NU			
1025	19gal	13.43	0.031	0.20	4.69	220.4	688 NU			
1030								150		Sample

RESOLUTION CONSULTANTS

Well ID: RE128D2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage
Project No: 60266526
Site Location: E Service Rd
Weather Conds: 37°F Cloudy
Date: 12 / 8 / 16
Time: Start 820 am/pm
Finish 1020 am/pm
Collector(s): JC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 760 ft
b. Water Table Depth 32.57 ft
c. Length of Water Column _____ ft (a-b)
d. Calculated System Volume (see back) 13.1 gal.
Casing Diameter/Material 4-inch PVC
20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	57671
LaMotte	2020we	

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
845	–	12.25	0.042	7.44	3.64	280.3	69.1	600	32.57	cloudy / none
850	–	12.22	0.040	3.62	3.94	278.6	51.1	600	32.57	"
855	–	12.26	0.038	3.20	3.87	290.1	–	600	32.57	"
900	5 gal	12.29	0.037	2.96	3.85	299.4	28.7	600	32.57	"
905	–	12.27	0.037	2.73	3.74	313.6	–	600	32.57	"
910	–	12.29	0.035	2.41	3.81	317.4	27.5	600	32.57	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

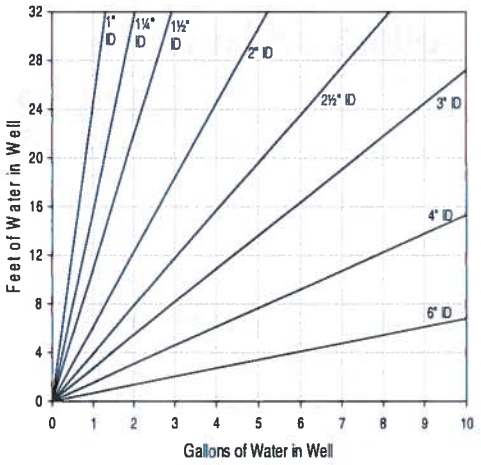
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE128D2-GW-120816	40-mL vials	3	HCl	VOCs	955
RE128D2-GW-120816	1-L amber	2	none	1,4-Dioxane	955

Comments

Signature _____ Date 12/8/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE128D2

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
915	—	12.29	0.035	2.24	3.85	320.9	12.28	600	32.58	Clearing / none
920	—	12.31	0.034	2.18	3.71	328.1	—	600	32.58	"
925	10 gal	12.28	0.034	2.16	3.83	323.7	11.56	600	32.58	"
930	—	12.32	0.034	2.02	3.78	329.5	—	600	32.58	"
935	—	12.29	0.033	2.05	3.74	331.1	11.65	600	32.59	"
940	—	12.31	0.033	1.99	3.69	335.9	—	600	32.58	"
945	—	12.32	0.032	1.91	3.72	335.8	10.49	600	32.58	"
950	13.5 gal	12.33	0.032	1.93	3.74	334.6	—	600	32.58	"
955	—	—	—	—	—	—	—	—	—	SAMPLE!

RESOLUTION CONSULTANTS

Well ID: RE122D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage
Project No: 60266526
Site Location: Curtis & Hayes
Weather Conds:
Date: 12 / 8 / 16
Time: Start 1235 am/pm
Finish _____ am/pm
Collector(s): F. Bell

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 545 ft
b. Water Table Depth 446.10 ft
c. Length of Water Column _____ ft (a-b)
d. Calculated System Volume (see back) _____ gal. _____ screen length (ft)
Casing Diameter/Material 4-inch PVC

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)
- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	08K100392

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1235	start									
~~1235~~	~~12.96~~	~~0.122~~	~~7.58~~	~~5.78~~						
1238	–	12.98	0.122	6.86	5.07	268.6	–	600	446.11	clear
~~1240~~		13.05	0.120	5.41	4.90	295.6	–		46.10	"
1245	–	12.98	0.119	5.30	4.85	305.8	3.22	600	46.10	"
1250	–	13.00	0.119	5.05	4.84	314.5	1.35	600	46.10	clear

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

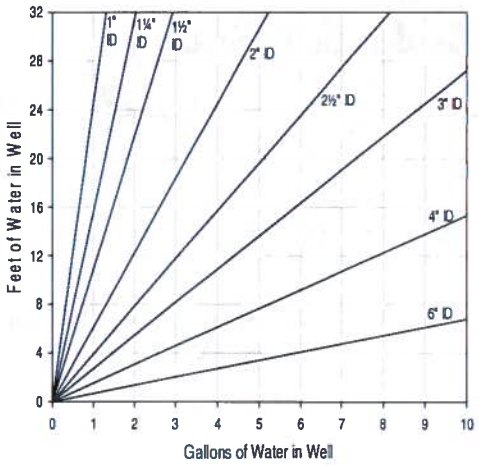
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE122D1-GW-120816	40-mL vials	3	HCl	VOCs	1350
RE122D1-GW-120816	1-L amber	2	none	1,4-Dioxane	1350

Comments

Signature _____ Date 12-08-16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1255	-	13.03	0.119	5.00	4.85	315.0	-	600	46.09	clear
1300	5 Gal	13.00	0.118	4.88	4.86	319.3	0.73	600	46.07	clear
1305	-	13.00	0.118	4.84	4.87	320.6	-	600	46.05	"
1310	-	13.01	0.119	4.76	4.93	321.9	0.67	600	46.01	"
1315	-	12.95	0.118	4.73	4.93	324.5	-	600	46.00	clear
1320	-	12.94	0.118	4.70	4.95	325.3	0.51	600	45.98	Clear
1325	-	12.90	0.118	4.70	4.95	326.3	-	600	45.97	Clear
1330	10 Gal	12.93	0.119	4.60	4.96	327.3	0.56	600	45.95	clear
1335	-	12.91	0.119	4.40	4.99	325.6	0.54	600	45.99	clear
1340	-	12.91	0.119	4.36	5.01	324.1	0.51	600	45.94	Clear
1345	-	12.89	0.119	4.21	5.09	323.7	0.51	600	45.93	Clear
1350	13.5 Gal	Sample time.								

RESOLUTION CONSULTANTS

Well ID: RE12202

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 8 / 16 Time: Start 1215 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Curtis + Hayden
Weather Conds: 45°F cloudy Collector(s): SC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 615 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 46.44 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	54965
LaMotte	2020we	

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1220	ON							600		
1225	–	13.57	0.100	4.49	4.74	325.0	0.36	600	46.44	clear / none
1230	–	13.51	0.100	2.41	4.68	336.4	–	600	46.44	"
1235	–	13.53	0.099	2.37	4.65	342.2	0.36	600	46.38	"
1240	~~Eight~~	13.57	0.098	2.88	4.67	348.8	–	600	46.38	"
1245	–	13.50	0.096	3.84	4.57	358.4	0.49	600	46.38	"

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

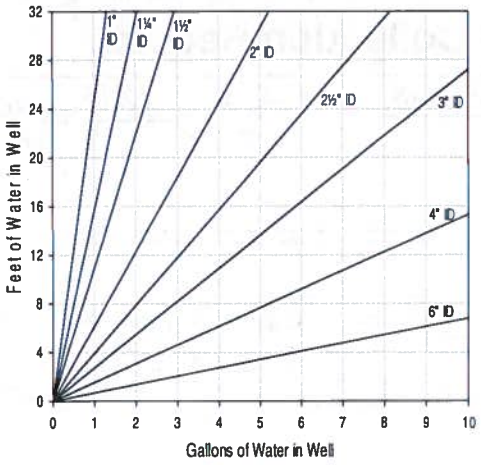
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE12202-GW-120816	40-mL vials	3	HCl	VOCs	1340
RE12202-GW-120816	1-L amber	2	none	1,4-Dioxane	1340

Comments MS / MSD collected here

Signature _____ Date 12/8/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1250	5 gal	13.51	0.096	3.94	4.52	369.3	0.44	600	46.38	clear / none
1255	–	13.65	0.097	4.04	4.46	375.6	–	600	46.38	"
1300	–	13.58	0.097	4.28	4.48	377.7	0.48	600	46.38	"
1305	–	13.54	0.098	4.64	4.47	384.5	–	600	46.38	"
1310	–	1350	0.099	4.83	4.47	387.6	0.32	600	46.38	"
1315	10 gal	13.34	0.098	4.94	4.38	395.8	–	600	46.38	"
1320	–	13.39	0.099	5.02	4.38	398.9	0.42	600	46.38	"
1325	–	13.33	0.099	5.06	4.34	403.1	–	600	46.38	"
1330	–	13.49	0.099	5.09	4.36	404.9	0.28	600	46.38	"
1335	13.5 gal	13.49	0.099	5.14	4.38	406.9	–	600	46.38	"
1340	–	–	–	–	–	–	–	–	–	SAMPLE

RESOLUTION CONSULTANTS

Well ID: RE12203

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12/8/16 | Time: Start 1260 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: Curtis & Hayden
Weather Conds: Cloudy, 46° | Collector(s): Paul Kaveth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 740 ft | c. Length of Water Column ____ ft (a-b) | Casing Diameter/Material 4-inch PVC
b. Water Table Depth 46.86 ft | d. Calculated System Volume (see back) 13.1 gal. | 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)
- Temperature ± 3% | - Turbidity ± 10% | - D.O. ± 10% (values >0.5 mg/L)
- pH ± 0.1 unit | - ORP ± 10mV | Remove a minimum 1 screen volume
- Conductivity ± 3% | - Drawdown < 0.3'

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09F101780
LaMotte	2020	73576

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1215	ON							600		
1225		13.58	0.023	3.65	4.58	19.8			46.94	
1230		13.42	0.024	2.48	4.61	27.0	8.70	600	46.94	clear / none
1235		13.41	0.024	2.56	4.50	33.7				
1240	5 gal	13.50	0.023	3.41	4.25	30.0	6.42		46.96	
1245		13.41	0.023	3.52	4.13	29.4				

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

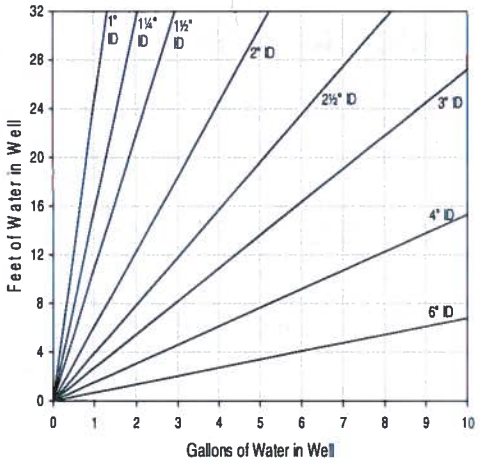
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE12203-GW-120816	40-mL vials	3	HCl	VOCs	1330
	1-L amber	2	none	1,4-Dioxane	
ORP02-GW-120816					1600

Comments

Signature Paul Kaveth Date 12/8/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE122203

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1250		13.58	0.023	3.50	4.06	30.6	3.16	600	46.97	
1255		13.54	0.023	3.47	4.01	30.2				
1300		13.41	0.023	3.44	3.93	31.9	2.46			
1305	16gal	13.47	0.023	3.42	3.87	33.0			46.96	
1310		13.39	0.023	3.45	3.83	34.6	2.76	600		
1315		13.24	0.023	3.30	3.72	38.5				
1320		13.42	0.023	3.32	3.69	39.8	2.82		46.95	
1325	13gal	13.36	0.023	3.35	3.65	40.4	3.08			
1330								150		sample
										DUP02/1600

RESOLUTION CONSULTANTS

Well ID: RE120D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12 / 9 / 16 | Time: Start 730 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: Shelley & Hahn
Weather Conds: 32° sunny windy | Collector(s): SC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 665 ft
b. Water Table Depth 39.59 ft
c. Length of Water Column ____ ft (a-b)
d. Calculated System Volume (see back) ____ gal. ____ screen length (ft)
Casing Diameter/Material 4-inch PVC

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)
- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)
Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	54965

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
815	ON									
0830		14.05	0.109	3.96	5.78	259	1.32	500	39.69	clear, no odor
0835		14.18	0.106	3.06	5.30	305			39.72	
0840		14.13	0.106	3.07	4.96	336.4	1.52	500		clear no odor
0845		14.14	0.106	2.94	4.95	342.3			39.72	
0850	5G	14.18	0.106	3.02	4.87	356.6	1.59	500		

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION:

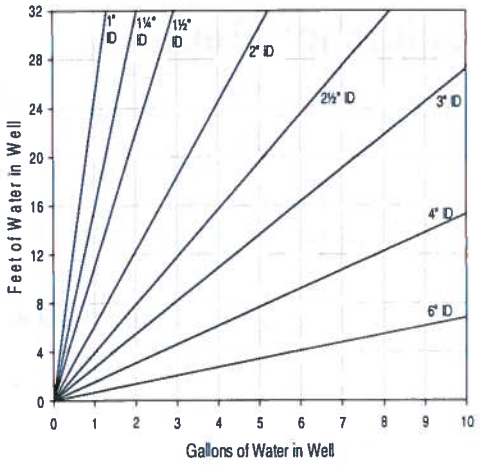
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE120D1-GW-120916	40-mL vials	3	HCl	VOCs	945
RE120D1-GW-120916	1-L amber	2	none	1,4-Dioxane	

Comments: Sample at 0945

Signature: [signature] Date: 12/9/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
0855		14.28	0.106	2.53	4.89	358.2		500	39.72	clear, no odor
0900		14.35	0.106	2.47	4.88	359.4	1.51			
0905		14.40	0.106	2.95	4.80	373.5	0.92	500	39.72	
0910	1067	14.41	0.106	2.91	4.79	374.6		500	39.72	
0915		14.31	0.105	3.23	4.74	383.2	0.52			
0920		14.40	0.106	3.15	4.76	382.5		500	39.75	
0925		13.22	0.103	3.17	4.79	382.0				
0930		14.35	0.106	3.20	4.75	382.0	1.0	500	39.73	
0935		14.37	0.106	3.15	4.76	382.5				
0940		14.35	0.105	3.18	4.75	382.0		500	39.73	
Sample time			0945							

RESOLUTION CONSULTANTS

Well ID: RE120D2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 9 / 16 Time: Start 730 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Shelley & Hakin
Weather Conds: sunny 32° windy Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 73 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 39.45 ft d. Calculated System Volume (see back) _____ gal. _____ screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	08K100392

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
830	ON									
835	—	11.43	0.111	8.42	5.98	165.7				
0845	—	11.94	0.111	2.92	5.41	216.2	1.18	350	39.59	clear
0900	—	12.66	0.111	2.10	5.16	260.5	—	500	39.55	clear
0905	—	12.92	0.110	3.09	5.18	277.1	1.13	600	39.53	Clear
0910	—	12.85	0.111	4.32	5.15	282.8	—	600	39.53	Clear

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

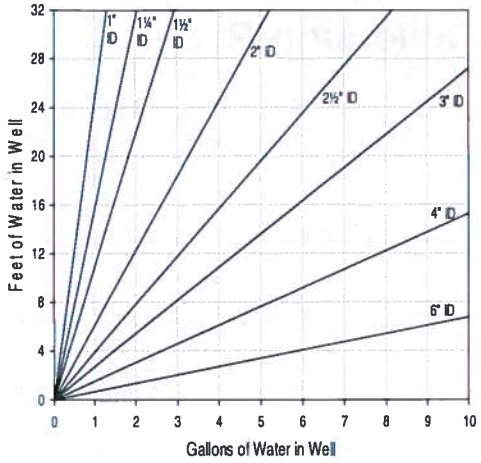
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE120D2-GW-120916	40-mL vials	3	HCl	VOCs	1020
RE120D2-GW-120916	1-L amber	2	none	1,4-Dioxane	1020

Comments: Sampled VOCs @ 175 ml/min Low pressure

Signature _____ Date 12-9-16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
0915	5 Gal	12.97	0.111	4.12	5.21	285.1	—	600	49.56	
0920	—	13.01	0.112	3.86	5.22	291.6	—	600	49.55	
0925	—	13.04	0.112	3.75	5.28	293.9	3.81	600	49.56	clear
0930	—	13.03	0.111	3.86	5.24	295.4	—	600	49.57	"
0935	—	13.01	0.111	3.92	5.22	300.6	—	600	49.59	"
0940	—	13.12	0.111	3.92	5.22	301.2	0.84	600	49.59	"
0945	—	13.15	0.111	3.91	5.24	303.6	0.92	600	49.60	"
0950	10 Gal	13.05	0.111	3.86	5.21	306.9	0.94	600	49.60	"
0955	—	13.10	0.110	3.96	5.22	308.1	0.89	600	49.61	"
1000	—	13.15	0.110	3.95	5.23	308.6	0.91	600	49.60	"
1005	—	13.20	0.110	3.99	5.20	311.8	0.94	600	49.61	"
1010	13.5 Gal	13.24	0.110	3.99	5.22	310.8	0.97	600	49.62	"
1020	Sample time									

Well ID: RE12003

RESOLUTION CONSULTANTS

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 9 / 16 Time: Start 730 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Skelley & Hakin
Weather Conds: sunny 52°, windy Collector(s): Paul Kareth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 765 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 39.92 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	AE101780
	LaMotte	2020	73561

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
~~825~~	OH							600		
835		15.00	0026	5.24	4.70	-10.5				
845		14.45	0.025	2.97	4.20	14.9			40.01	pump turned off
850		14.47	0.026	3.08	4.05	27.8	6.34	600		
855		14.58	0.027	3.76	3.99	22.1				
900	5 gal	14.68	0.027	4.00	4.04	15.0				

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

3. SAMPLE COLLECTION:

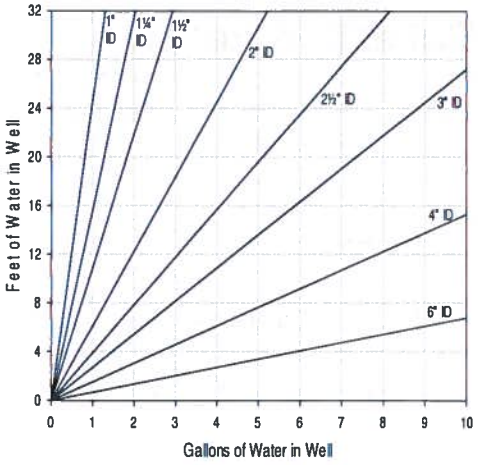
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE12003-GW-120916	40-mL vials	3	HCl	VOCs	950
	1-L amber	2	none	1,4-Dioxane	

Comments pump broke loose and fell down the hole, lift bottom was cable cold to quickly retrieve the pump

Signature Paul Kareth Date 12-9-16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE120 03 8:25

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
905		14.73	0.027	3.94	4.31	4.9	69	660	40.02	
910		14.70	0.027	3.95	4.29	-0.7	66.3			
915		14.74	0.027	4.02	4.22	0.2	87.1			
920		14.71	0.017	5.94	4.13	27.1				clear silt from flowcell
925	16 gal	14.70	0.027	4.23	4.04	9.9	38.5		40.02	
930		14.58	0.027	4.00	4.05	8.2	44.3			
935		14.58	0.026	4.02	4.04	6.4	45.4			
940	13 gal	14.66	0.026	4.06	4.09	3.6	48.1	607	40.02	
950										sample

RESOLUTION CONSULTANTS

Well ID: RE11701

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 9 / 16 Time: Start 1140 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Susan Ct
Weather Conds: 36° sunny windy Collector(s): T. Bell

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 575 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 24.72 ft d. Calculated System Volume (see back) _____ gal. _____ screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	08K100392

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
ON	1225									
1230	-	12.13	0.036	4.44	4.84	266.4	11.72	600	24.72	
1235		12.52	0.036	4.13	4.88	272	13.4	600	24.72	
1240		12.62	0.035	3.89	4.79	284		600	24.72	
1245		11.98	0.033	4.21	4.53	307	12.9			
1250	5G	12.21	0.033	4.28	4.54	312		600	24.72	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

3. SAMPLE COLLECTION:

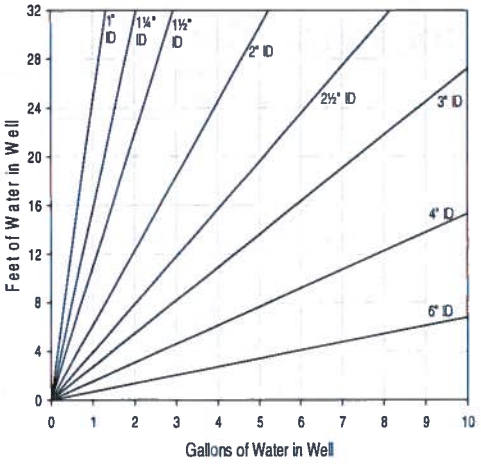
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE11701-GW-120916	40-mL vials	3	HCl	VOCs	1550
RE11701-GW-120916	1-L amber	2	none	1,4-Dioxane	1350

Comments

Signature _____ Date 12-09-16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1255		12.34	0.033	4.28	4.55	313	24.4	600	24.72	
1300		12.58	0.033	4.14	4.55	315				
1305		11.87	0.032	4.13	4.41	324	17.3	600	24.72	
1310		11.87	0.032	4.10	4.44	321		600	24.72	
1315	10 G	11.86	0.032	4.07	4.46	320	22.6			
1320		11.84	0.032	4.10	4.49	316		600	24.72	
1325		11.72	0.032	4.01	4.41	320.9	23.6	600	24.72	
1330		11.88	0.032	4.04	4.52	316.4	20.0	600	24.71	
1335		11.81	0.032	4.04	4.49	319.6	19.2	600	24.70	
1340	15 Gal	11.77	0.032	4.04	4.46	321.3	19.7	600	24.70	
1345	-	11.73	0.032	4.04	4.46	321.7	19.6	600	24.69	Clear
1350	Sample time									

Well ID: RE11702

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12 / 9 / 16 | Time: Start 1140 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: Susan Cb
Weather Conds: 36° sunny windy | Collector(s): ____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 760 ft | c. Length of Water Column ____ ft (a-b) | Casing Diameter/Material 4-inch PVC

b. Water Table Depth 23.72 ft | d. Calculated System Volume (see back) 16.3 gal. | 25 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	07K100291

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1215	0 N							600		
1225		13.69	0.026	1.12	4.53	302.3			23.80	
1230		12.94	0.026	0.94	4.38	310.5	14.0	600		
1235		13.43	0.027	0.87	4.14	327.1		600	23.82	
1240		13.01	0.027	0.83	4.15	335.3	8.49			
1245	5gal	12.81	0.026	0.64	3.91	351.2				

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

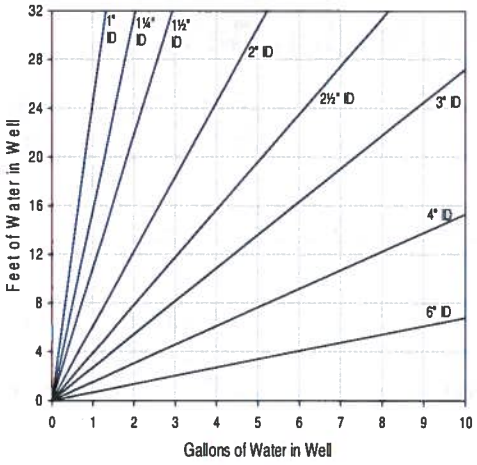
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE117P2-GW-120916	40-mL vials	3	HCl	VOCs	1400
	1-L amber	2	none	1,4-Dioxane	

Comments: tubing issues air line unstuck, discharge line leaks

Signature: Paul Krafft | Date: 12/9/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE11702 @ 1215

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1250		13.46	0.027	0.56	3.96	340.6	17.8		23.81	
1255		13.33	0.026	0.48	4.09	322.0		600		
1300		13.71	0.026	0.44	4.15	313.9	18.0			
1305		13.88	0.026	0.41	4.15	312.2			23.82	
1310	10 Gal	13.60	0.026	0.39	3.86	324.3	13.8	600		
1315		12.54	0.026	0.35	3.82	329.2				
1320		12.45	0.026	0.31	3.71	334.9	10.69			
1325		12.18	0.026	0.33	3.69	336.6	9.24	600		
1330		12.32	0.026	0.29	3.54	347.5	8.69		23.81	
1335		12.30	0.026	0.28	3.78	338.7	6.85			
1340	15 gal	12.25	0.026	0.25	3.81	337.1	5.20	600		
1345	16.5 gal	12.07	0.026	0.26	3.73	343.8	5.00		23.81	
1350	16 gal	12.06	0.26	0.23	3.68	347.9	4.47			
↳	16.5 gal									
1400								150		sample

Well ID: RE105D1

RESOLUTION CONSULTANTS

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 12 / 16 Time: Start 830 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Lincoln / Roosevelt
Weather Conds: rain, 40°F Collector(s): G. Hicks

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 555 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 40.63 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	07K100291

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
830	04									
835		14.27	0.131		5.37	235	231	600	40.76	clear/none
840		14.36	0.126		5.04	246.1	1.65	600	40.75	clear/none
845		14.38	0.125		4.98	293.9	1.73	600	40.75	clear/none
850		14.46	0.125	3.03	4.86	296.1	2.35	600	40.75	clear/none
855		14.5	0.124	2.84	4.78	317.1	2.11	600	40.79	clear/none

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

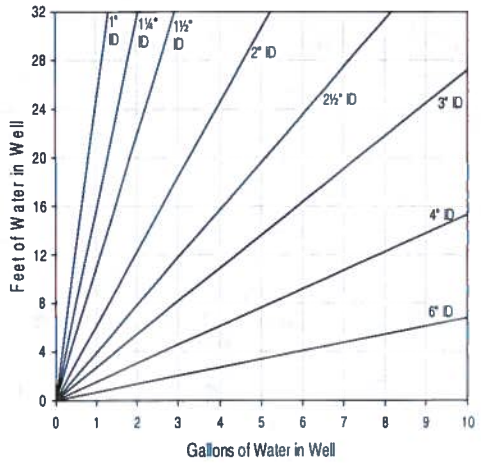
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE105D1-GW-121216	40-mL vials	3	HCl	VOCs	940
	1-L amber	2	none	1,4-Dioxane	

Comments

Signature _____ Date 12/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
0900	5	14.46	0.124	2.72	4.74	326.7	1.68	600	40.82	Clear/none
0905		14.49	0.124	2.69	4.72	336.0	2.41	600	40.88	Clear/none
0910		14.50	0.124	2.67	4.70	341.6	1.96	600	40.90	Clear/none
0915		14.54	0.124	2.63	4.68	349.9	1.40	600	40.96	Clear/none
0920		14.54	0.124	2.59	4.69	353.0	1.69	600	40.99	Clear/none
0925	10	14.55	0.124	2.60	4.67	355.8	1.48	600	41.00	Clear/none
0930		14.53	0.124	2.49	4.66	361.9	1.37	600	41.09	Clear/none
0935		14.55	0.124	2.47	4.65	365.6	1.41	600	41.11	Clear/none
0940	13.5	14.56	0.124	2.46	4.65	367.1	1.39	600	41.09	Clear/none

Well ID: RE 105D2

RESOLUTION CONSULTANTS

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 12 / 16 Time: Start _____ am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Lincoln & Roosevelt
Weather Conds: rain, 40° Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 755 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 41.22 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09F101780
LaMotte	2020	73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
840	OH									
850	1	14.08	0.074	6.21	5.18	-16.7		650	41.40	
855		14.12	0.075	3.13	4.97	-10.5	0.60	650		
900		14.12	0.071	3.10	4.81	6.2			42.25	
905	5 gal	14.09	0.79	4.72	4.73	2.2	0.95			
910		14.17	0.083	5.34	4.71	-3.4				

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

(continued on back)

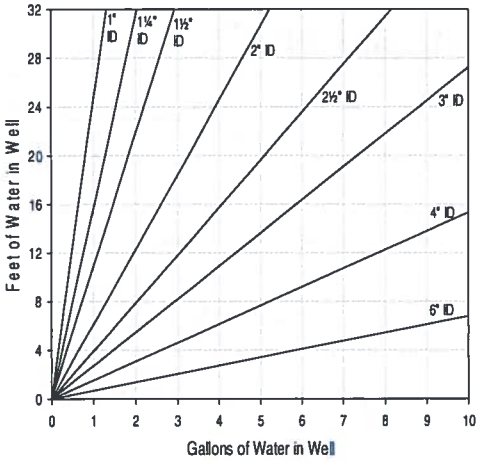
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE105D2-GW-121216	40-mL vials	3	HCl	VOCs	
	1-L amber	2	none	1,4-Dioxane	

Comments

Signature Paul Kaneth Date 12/12/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE105D2 28:40

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
915		14.17	0.083	5.20	4.70	-4.4		650		
920		14.16	0.084	5.18	4.66	-4.5	1.16			
925		14.13	0.084	5.37	4.65	-4.8		650	?	WL meter is wet
930	1gal	14.14	0.084	5.28	4.63	-4.7	1.37			wating
935		14.08	0.084	5.27	4.62	-4.4	0.98	650		
940		14.07	0.082	5.30	4.59	-7.2			43.35	swap WL meters
945		14.16	0.081	5.27	4.59	-4.7	0.93			
950	1.5gal	14.24	0.081	5.28	4.60	-4.5		650	43.34	
1000										Sample

RESOLUTION CONSULTANTS

Well ID: RE108D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12 / 12 / 16 | Time: Start 1106 am/pm | Finish ____ am/pm
Project No: 60266526
Site Location: Corona & Cryil
Weather Conds: Cloudy, 45°, wind | Collector(s): G. Hicks

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 535 ft c. Length of Water Column ____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 44.55 ft d. Calculated System Volume (see back) 13 gal. 20' screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09F101780

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1125		13.76	0107	13.22	5.10	59.3		600		Clear/none
1130		14.15	0108	7.76	4.97	30.3		600	44.62	Clear/none
1135		14.19	0.108	7.20	4.86	21.8	1.12	600	44.63	Clear/none
1140		14.20	0.108	7.15	4.82	18.5	1.09	600	44.63	Clear/none
1145		14.25	0.108	7.76	4.73	13.4	1.11	600	44.63	Clear/none
1150		14.27	0.108	7.66	4.71	10.5	1.26	600	44.63	Clear/none

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

(continued on back)

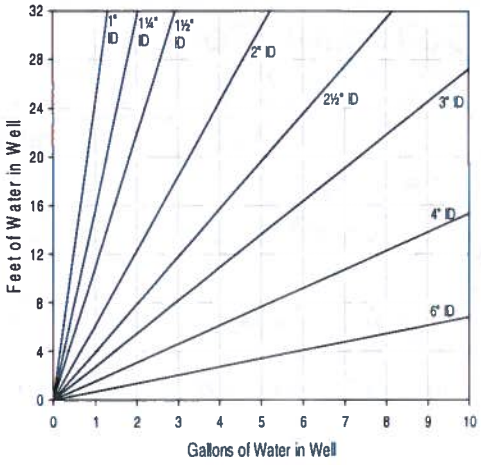
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE108D1-GW-121216	40-mL vials	3	HCl	VOCs	1240
RE108D1-GW-121216	1-L amber	2	none	1,4-Dioxane	1240

Comments

Signature [signature] Date 12/12/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1155	5	14.20	0.107	7.80	4.67	8.9	0.98	600	44.68	Clear / none
1200		14.17	0.108	7.77	4.67	6.6	0.69	600	44.68	Clear / none
1205	7.5	14.27	0.108	7.63	4.62	7.8	0.96	600	44.68	clear / none
1210		14.26	0.108	7.37	4.63	5.8	1.03	600	44.69	clear / none
1215		14.26	0.108	7.27	4.64	4.2	1.11	600	44.68	Clear / non
1220	10	14.20	0.108	7.47	4.61	5.5	0.96	600	44.66	clear / none
1225		14.26	0.108	7.60	4.58	6.6	0.94	600	44.68	Clear / none
1230		14.29	0.108	7.67	4.59	6.1	0.98	600	44.66	Clear / none
1235		14.26	0.108	7.56	4.59	6.2	0.92	600	44.68	Clear / none
1240	13.5	14.32	0.108	7.52	4.58	6.6	0.96	600	44.68	Clear / none

RESOLUTION CONSULTANTS

Well ID: RE10802

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 12 / 16 Time: Start 1100 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Corona ECil
Weather Conds: cloudy, 45°, wet from rain Collector(s): Paul Kaneth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 65.5 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 45.44 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1125	ON	~~14.13~~	~~0.092~~	~~4.40~~	5.18				45.50	
1135		14.13	0.092	4.40	5.18	345.6	0.90	600	45.54	
1140		14.23	0.091	3.21	5.07	347.1				
1145		14.25	0.091	2.89	5.03	349.2	1.30	600	45.52	
1150		14.30	0.090	4.48	4.92	357.1			45.53	
1155	5gal	14.27	0.090	4.64	4.89	363.6		600		

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

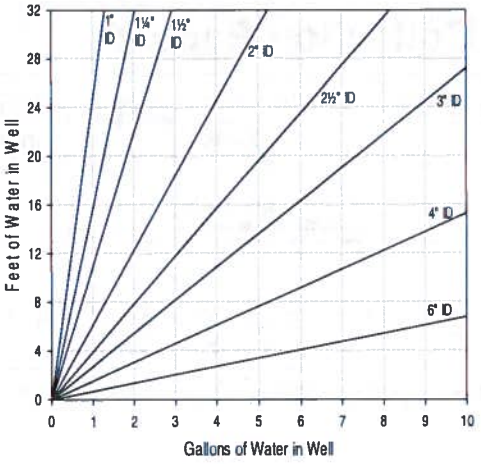
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE10802-GW-121216	40-mL vials	3	HCl	VOCs	1250
	1-L amber	2	none	1,4-Dioxane	

Comments

Signature Paul Kaneth Date 12/12/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: RE108D2 @ 11:25

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1200		14.24	0.090	4.68	4.87	368.2	0.72	600	45.55	
1205		14.27	0.090	4.74	4.85	372.4				
1210		14.28	0.090	4.79	4.85	376.3	1		45.52	
1215		14.33	0.090	4.84	4.83	377.9	1.13	600		
1220		14.26	0.089	4.92	4.83	382.4			45.51	
1225	10gal	14.30	0.089	5.02	4.81	386.4	1.33			
1230		14.32	0.089	5.09	4.80	389.3			45.40	
1235		14.31	0.089	5.10	4.85	389.9	0.97	600		
1240		14.34	0.089	5.13	4.79	391.1				
1245	13gal	14.29	0.089	5.19	4.78	394.1			45.35	
1250								150		Sample

Well ID: TT101D2

RESOLUTION CONSULTANTS

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/12/16 Time: Start 1350 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Gw
Weather Conds: Cloudy 45° Collector(s): SC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____ ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 38.2 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	09F101780

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1420										start pump
1425		15.21	0.049	4.14	4.81	-5.8	1.17	650	38.45	
1430		15.15	0.049	2.81	4.65	-8.6			38.55	clear, no odor
1435		15.14	0.049	2.96	4.81	-9.5	0.51	650	38.45	
1440		15.13	0.049	3.83	4.82	-27.8	0.82	650		
1445	5G	15.15	0.049	5.31	4.78	-28.0	0.47			

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

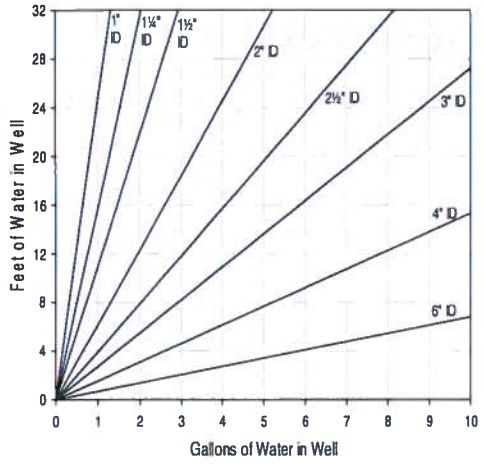
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
TT101D2-GW-121216	40-mL vials	3	HCl	VOCs	1530
TT101D2-GW-121216	1-L amber	2	none	1,4-Dioxane	

Comments: Sampled at 1530

Signature: [signature] Date: 12/12/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1450		15.15	0.048	5.96	4.76	-27.7		650	38.45	clear, no odor
1455		15.13	0.048	6.66	4.74	-28.2	0.62			
1500	10 G	15.11	0.049	7.02	4.69	-26.6		650	38.45	
1505		15.11	0.049	6.96	4.68	-26.7	0.55			
1510		15.11	0.049	6.93	4.66	-25.8	0.55	650	38.45	
1515		15.11	0.049	6.99	4.65	-24.3		650		
1520		15.09	0.049	7.01	4.65	-24.7	0.65		38.45	
1535		15.11	0.049	6.98	4.64	-25.3	0.57	650	38.47	
Sample at 1530.										

RESOLUTION CONSULTANTS

Well ID: TT101D

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12/12/16 Time: Start 1350 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: _____
Weather Conds: cloudy 45° Collector(s): _____

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 36.55 ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 36.57 ft d. Calculated System Volume (see back) 13.1 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	08K100392
	LaMotte	2020	73567

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1405								1000	36.58	
1410								800		
1415		14.05	0.192	3.21	4.41	290.6			36.58	
1420		14.02	0.184	1.85	4.48	283.6	1.08	800		
1425		13.97	0.179	1.39	4.53	275.5			36.57	
1430	5 gal	13.94	0.178	1.12	4.52	277.0	1.55			

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

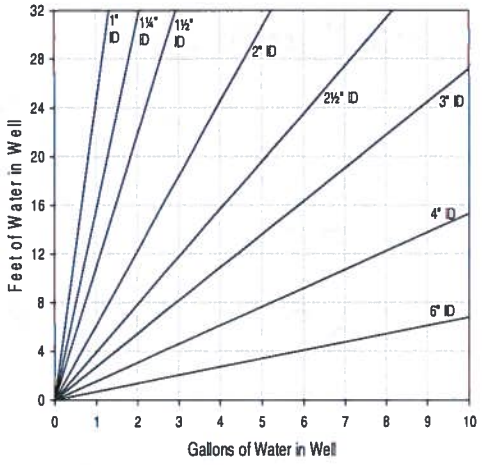
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
TT101D-GW-121216	40-mL vials	3	HCl	VOCs	1515
	1-L amber	2	none	1,4-Dioxane	

Comments _____

Signature Paul Kreuth Date 12/12/16

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID: TT161D @ 1405

(continued from front) Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1435		13.93	0.178	0.99	4.52	279.7	0.94	800	36.58	
1440		13.92	0.178	0.84	4.51	280.3				
1445		13.89	0.178	0.81	4.49	282.5	0.91			
1450	1 gal	13.93	0.178	0.75	4.50	284.5		800	36.58	
1455		13.89	0.178	0.69	4.48	288.3	1.56			
1500		13.89	0.178	0.70	4.49	288.7				
1505	~~1 gal~~	13.86	0.177	0.71	4.48	290.1		800	36.59	
1510	1 gal	13.88	0.177	0.66	4.47	291.2	1.15			
1515										Sample

RESOLUTION CONSULTANTS

Well ID: TT101D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 12 / 16 Time: Start 1350 am/pm
Project No: 60266526 Finish _____ am/pm
Site Location: Emerson / Wadsworth
Weather Conds: 45°F, Cloudy Collector(s): G. Hicks

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____ ft c. Length of Water Column _____ ft (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 37.72 ft d. Calculated System Volume (see back) 13 gal. 20 screen length (ft)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3%
- pH ± 0.1 unit
- Conductivity ± 3%
- Turbidity ± 10%
- ORP ± 10mV
- Drawdown < 0.3'
- D.O. ± 10% (values >0.5 mg/L)

Remove a minimum 1 screen volume

c. Field Testing Equipment used:

Make	Model	Serial Number
YSI	556	07K100091

Time (24hr)	Volume Removed (gallons)	Temp. (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1400		15.34	0.110	2.50	4.93	323.8	1.02		37.70	Clear/none
1405		15.32	0.110	1.22	4.98	318.6		600	37.70	clear/none
1410		15.47	0.110	0.83	4.94	319.3	1.33	600	37.70	Clear/none
1415		15.35	0.110	0.48	4.86	324.2	0.64	800	37.70	Clear/none
1420	5	15.34	0.111	0.77	4.82	328.4	0.72	800	37.70	Clear/none
1425		15.33	0.112	1.07	4.73	341.0	1.61	800	37.69	Clear/none

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

3. SAMPLE COLLECTION:

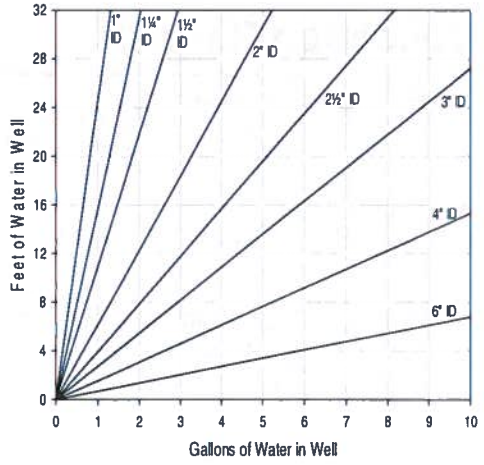
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
TT101D1-GW-121216	40-mL vials	3	HCl	VOCs	1455
TT101D1-GW-121216	1-L amber	2	none	1,4-Dioxane	1455

Comments

Signature _____ Date 121216

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

One screen volume (4-inch well)

15 ft = 37.1 L / 9.8 G
20 ft = 49.4 L / 13.1 G
25 ft = 61.8 L / 16.3 G
30 ft = 74.3 L / 19.6 G
40 ft = 99.2 L / 26.1 G
50 ft = 123.6 L / 32.6 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (gallons)	Temp (°C)	Conduct. (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Flow Rate (mL/min)	Depth to water (ft)	Color/Odor
1430		15.32	0.117	1.15	4.71	348.0	1.32	800	37.68	Clear / none
1435		15.33	0.111	1.11	4.71	351.9	1.26	800	37.69	Clear / none
1440	10	15.32	0.111	1.15	4.69	355.5	1.13	800	37.68	Clear / none
1445		15.31	0.111	1.15	4.67	360.6	1.05	800	37.69	Clear / none
1450		15.32	0.111	1.09	4.66	363.5	1.09	800	37.69	Clear / none
1455	13.5	15.31	0.111	1.05	4.66	364.6	1.03	800	37.69	Clear / none

Appendix B

Analytical Data Validation – Resolution Consultants

DATA VALIDATION REPORT

Project:	Regional Groundwater Investigation — Naval Weapons Industrial Reserve Plant Bethpage	
Laboratory:	Katahdin Analytical	
Sample Delivery Group:	BETHPAGE-8	
Analyses/Method:	Volatile Organic Compounds by United States Environmental Protection Agency SW-846 Method 8260C, and 1,4-Dioxane by United States Environmental Protection Agency SW-846 Method 8270D via Selective Ion Monitoring	
Validation Level:	Stage 3	
Project Number:	0888812477.SA.DV	
Prepared by:	Dana Miller/Resolution Consultants	Completed on: 02/08/2017
Reviewed by:	Tina Cantwell/Resolution Consultants	File Name: BETHPAGE 8_8260C_8270D

SUMMARY

This report summarizes data review findings for samples listed below, collected by Resolution Consultants from the Regional Groundwater Investigation — Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage Site on 5 to 12 December 2016 in accordance with the following Sampling and Analysis Plans:

- *Sampling and Analysis Plan, Bethpage, New York.* (Resolution Consultants April 2013).
- *UFP SAP Addendum, Installation of Vertical Profile Borings and Monitoring Wells, Operable Unit 2, NWIRP Bethpage, New York.* (Resolution Consultants November 2013).
- *UFP SAP Addendum, Inclusion of Additional Target Analytes for Volatile Organics Analyses, NWIRP Bethpage OU2, Bethpage, New York*. (Resolution Consultants August 2014).

Sample ID	Matrix/Sample Type	Analysis
TB01-WQ-120516	Trip Blank	8260C
RE131D1-GW-120616	Groundwater	8260C/8270D_SIM
RE131D2-GW-120616	Groundwater	8260C/8270D_SIM
RE131D3-GW-120616	Groundwater	8260C/8270D_SIM
RE126D1-GW-120616	Groundwater	8260C/8270D_SIM
RE126D2-GW-120616	Groundwater	8260C/8270D_SIM
RE126D3-GW-120616	Groundwater	8260C/8270D_SIM
RE103D1-GW-120516	Groundwater	8260C/8270D_SIM

Sample ID	Matrix/Sample Type	Analysis
RE103D2-GW-120516	Groundwater	8260C/8270D_SIM
RE103D3-GW-120516	Groundwater	8260C/8270D_SIM
FB-01-WQ-120516	Field Blank	8260C/8270D_SIM
RE104D1-GW-120516	Groundwater	8260C/8270D_SIM
RE104D2-GW-120516	Groundwater	8260C/8270D_SIM
RE104D3-GW-120516	Groundwater	8260C/8270D_SIM
DUP01-GW-120516	Duplicate of RE104D1-GW-120516	8260C/8270D_SIM
TB02-WQ-120716	Trip Blank	8260C
RE128D2-GW-120816	Groundwater	8260C/8270D_SIM
RE122D1-GW-120816	Groundwater	8260C/8270D_SIM
RE122D2-GW-120816	Groundwater	8260C/8270D_SIM
RE122D3-GW-120816	Groundwater	8260C/8270D_SIM
DUP02-GW-120816	Duplicate of RE122D3-GW-120816	8260C/8270D_SIM
RE125D1-GW-120716	Groundwater	8260C/8270D_SIM
RE125D2-GW-120716	Groundwater	8260C/8270D_SIM
RE125D3-GW-120716	Groundwater	8260C/8270D_SIM
RE123D1-GW-120716	Groundwater	8260C/8270D_SIM
RE123D2-GW-120716	Groundwater	8260C/8270D_SIM
RE123D3-GW-120716	Groundwater	8260C/8270D_SIM
FB-02-WQ-120816	Field Blank	8260C/8270D_SIM
RE128D1-GW-120816	Groundwater	8260C/8270D_SIM
TB03-WQ-120916	Trip Blank	8260C
RE108D2-GW-121216	Groundwater	8260C/8270D_SIM
TT101D-GW-121216	Groundwater	8260C/8270D_SIM
TT101D1-GW-121216	Groundwater	8260C/8270D_SIM
TT101D2-GW-121216	Groundwater	8260C/8270D_SIM
RE120D1-GW-120916	Groundwater	8260C/8270D_SIM
RE120D2-GW-120916	Groundwater	8260C/8270D_SIM
RE120D3-GW-120916	Groundwater	8260C/8270D_SIM
RE117D1-GW-120916	Groundwater	8260C/8270D_SIM
RE117D2-GW-120916	Groundwater	8260C/8270D_SIM
RE105D1-GW-121216	Groundwater	8260C/8270D_SIM
RE105D2-GW-121216	Groundwater	8260C/8270D_SIM
RE108D1-GW-121216	Groundwater	8260C/8270D_SIM

Note:
SIM = Selective Ion Monitoring

Data validation activities were conducted using the following guidance documents: *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846, specifically Method 8260C, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (United States Environmental Protection Agency [U.S. EPA] 2006), *SW-846 Method 8270D, Semivolatile Organic Compounds by Gas Chromatograph/Mass Spectrometry* (U.S. EPA 2007), *National Functional Guidelines for Superfund Organic Methods Data Review* (U.S. EPA September 2016), and *Department of Defense Quality Systems Manual for Environmental Laboratories*, Version 4.2 (October 2010). In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements, and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody)/sample integrity
✓	Holding times and sample preservation
✓	Gas chromatography/Mass spectrometer performance checks
✗	Initial calibration (ICAL)/initial calibration verification (ICV)/continuing calibration verification (CCV)
✗	Laboratory blanks/field blanks/trip blanks
✗	Surrogate spike recovery
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample/laboratory control sample duplicate results
✓	Field duplicates
✓	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. Acceptable data parameters for which all criteria were met, no qualification was performed, and/or non-conformance or other issues that were noted during validation, but did not result in qualification of data are not discussed further. The symbol (✗) indicates that a QC non-conformance resulted in the qualification of data. Any QC non-conformance that resulted in the qualification of data is discussed below.

RESULTS

Initial Calibration / Initial Calibration Verification / Continuing Calibration Verification

The ICAL is evaluated to ensure that the instrument was capable of producing acceptable qualitative and quantitative data prior to the analysis of samples. The ICV is evaluated to assess the accuracy of ICAL standards. The CCV is evaluated to determine whether the instrument was within acceptable calibration throughout the period in which the samples were analyzed. Failure of the CCV indicates that the ICAL is no longer valid and should trigger recalibration and reanalysis of the associated samples in the analytical sequence.

Data qualification to the analytes associated with the specific ICAL was as follows:

Initial Calibration Linearity Non-Conformance:

Criteria	Actions	
	Detected Results	Non-Detected Results
RSD >15% and quantitation based on mean response factor	J	UJ

Notes:
RSD = Relative standard deviation
J = Estimated
UJ = Undetected and estimated

Data qualification to the analytes associated with the specific ICV was as follows:

Initial Calibration Verification Recovery Non-Conformance:

Criteria	Actions	
	Detected Results	Non-Detected Results
Recovery >120%	J	UJ
Recovery < 80%	J	UJ

Notes:
J = Estimated value
UJ = Undetected and estimated

Data qualification to the analytes associated with the specific CCV was as follows:

Continuing Calibration Verification Linearity Non-Conformance:

Criteria	Actions	
	Detected Results	Non-Detected Results
%Difference or %Drift > 20%	J	UJ

Notes:
J = Estimated value
UJ = Undetected and estimated

ICAL, ICV, and CCV non-conformances are summarized in Attachment A in Table's A-1, A-2, and A-3.

Laboratory Blanks/Field Blanks/Trip Blanks

Laboratory blanks, field blanks, and trip blanks were analyzed with samples to assess contamination imparted by sample preparation and/or analysis. All results associated with a particular blank were evaluated to determine whether there was an inherent variability in the data, or if a problem was an isolated occurrence that did not affect the data. Samples were flagged in accordance with *Functional Guidelines* (shown below) where detections were not believed to be site-related.

Blank Non-Conformance Chart:

Blank type	Blank result	Sample result	Action
Method, Storage, Trip, Field, or Equipment	**Detects**	**Not Detected**	**No Qualification**
	≤ LOQ	< LOQ	Report sample at LOQ and qualify as non-detect (U)
		≥ LOQ or ≥ 2x Blank Result for Methylene chloride, Acetone, and 2-Butanone	Use professional judgement
	≥ LOQ	< LOQ	Report sample at LOQ and qualify as non-detect (U)
		≥ LOD but < Blank Result	Report at sample result and qualify as non-detect (U) or reject the sample result as unusable (R)
		≥ LOQ and ≥ Blank Result or 2x Blank Result for Methylene chloride, Acetone, and 2-Butanone	Use professional judgement
	Gross Contamination	Detect	Report at sample result and qualify as unusable (R)

Notes:

LOQ = Limit of quantitation
U = Undetected
R = Rejected

Field blank and laboratory blank non-conformance is summarized in Attachment A in Tables A-4 and A-5.

Surrogate Spike Recovery

Surrogates provide information needed to assess the accuracy of analyses. Known amounts of surrogate compounds, which are not likely to be found in the actual samples, are added to each organic sample to check for accuracy. If surrogate percent recoveries (%Rs) are close to the known concentrations, the reported target compound concentrations are assumed to be accurate. Data qualification on the basis of surrogate recovery was as follows:

Surrogate Spike Recovery Non-Conformance Chart:

Criteria	Action	
	Detected	Non-Detected
Lower Limit ≤ %R or RPD ≤ Upper Limit	No qualification	No qualification
% R > Upper Limit	J	No qualification
20% <%R < Lower Limit	J	UJ
% R < 20%	J	Rejected

Notes:
%R = Percent recovery
RPD = Relative percent differences
J = Estimated value
UJ = Undetected and estimated

Surrogate spike recovery non-conformances are summarized in Attachment A in Table A-6.

Matrix Spike / Matrix Spike Duplicate Results

MS/MSDs are generated to provide information about the effect of each sample matrix on the sample preparation and the measurement methodology. MS/MSD percent %Rs assess the effect of the sample matrix on the accuracy of the analytical results and %Rs above the laboratory control limit could indicate a potential high result bias while %Rs below QC limits could indicate a potential low result bias. The relative percent differences (RPDs) between the MS and MSD results are evaluated to assess sample precision. The MS/MSD %Rs and RPDs were reviewed for conformance with the QC acceptance criteria. Data qualification to the analytes associated with the specific MS/MSD non-conformances were as follows:

Matrix Spike / Matrix Spike Duplicate Non-Conformances Chart:

Criteria	Action	
	Detected Compounds	Non-Detected Compounds
%R or RPD > Upper Limit	J	No qualification
20% ≤ %R < Lower Limit	J	UJ
%R < 20%	J	Rejected

Notes:
%R = Percent recovery
RPD = Relative percent difference
J = Estimated
UJ = Undetected and estimated

MS/MSD non-conformances are summarized in Attachment A in Table A-7.

Qualification Actions

The data were reviewed independently from the laboratory to assess data quality. All compounds detected at concentrations less than the limit of quantitation but greater than the method detection limit were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation. Any sample that was analyzed at a dilution because of high concentrations of target or non-target analytes was checked to confirm that the results and/or sample-specific limit of quantitation and limit of detections were adjusted accordingly by the laboratory.

No results were rejected; therefore, analytical completeness was calculated to be 100 percent. Data not qualified during data review are considered usable by the project. The remaining results qualified as estimated may be high or low, but the data are usable for their intended purpose, according to U.S. EPA and Department of Defense guidelines. Attachment B provides a summary of all qualified results.

ATTACHMENTS

Attachment A: Non-Conformance Summary Tables
Attachment B: Qualified Results Summary

Attachment A
Non-Conformance Summary Table

Table A-1
Initial Calibration Non-Conformance

SDG	Method	Analyte	Instrument ID/ Calibration Date	RSD	RSD Limit	Associated Sample	Lab ID	Qualifiers
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	TB01-WQ-120516	TJ0283-1	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	FB-01-WQ-120516	TJ0283-5	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE103D1-GW-120516	TJ0283-2	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE103D2-GW-120516	TJ0283-3	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE103D3-GW-120516	TJ0283-4	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE104D3-GW-120516	TJ0283-8	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	DUP01-GW-120516	TJ0283-9	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE131D1-GW-120616	TJ0283-10	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE131D2-GW-120616	TJ0283-11	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE131D3-GW-120616	TJ0283-12	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE126D1-GW-120616	TJ0283-13	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE126D2-GW-120616	TJ0283-14	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE126D3-GW-120616	TJ0283-15	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE104D1-GW-120516	TJ0283-6RA	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE131D1-GW-120616	TJ0283-10RA	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE126D3-GW-120616	TJ0283-15RA	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE131D2-GW-120616	TJ0283-11DL	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE104D2-GW-120516	TJ0283-7	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	TB02-WQ-120716	TJ0411-1	Detects: J Non-detects: UJ

Table A-1
Initial Calibration Non-Conformance

SDG	Method	Analyte	Instrument ID/ Calibration Date	RSD	RSD Limit	Associated Sample	Lab ID	Qualifiers
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	FB-02-WQ-120816	TJ0411-8	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE103D1-GW-120516	TJ0283-2DL	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE103D2-GW-120516	TJ0283-3DL	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE103D3-GW-120516	TJ0283-4DL	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE126D2-GW-120616	TJ0283-14DL	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE125D1-GW-120716	TJ0411-2	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE125D2-GW-120716	TJ0411-3	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE125D3-GW-120716	TJ0411-4	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE123D1-GW-120716	TJ0411-5	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE123D2-GW-120716	TJ0411-6	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE123D3-GW-120716	TJ0411-7	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE128D1-GW-120816	TJ0411-9	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE128D2-GW-120816	TJ0411-10	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE125D1-GW-120716	TJ0411-2RA	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE125D2-GW-120716	TJ0411-3DL	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE125D3-GW-120716	TJ0411-4RA	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE123D1-GW-120716	TJ0411-5RA	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE123D2-GW-120716	TJ0411-6RA	Detects: J Non-detects: UJ
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE122D1-GW-120816	TJ0411-11DL	Detects: J Non-detects: UJ

Table A-1 Initial Calibration Non-Conformance								
SDG	**Method**	**Analyte**	**Instrument ID/ Calibration Date**	**RSD**	**RSD Limit**	**Associated Sample**	**Lab ID**	**Qualifiers**
BETHPAGE-8	8260C	Chloroethane	GCMS-P 30-NOV-16	**15.16379**	15	RE122D2-GW-120816	TJ0411-12DL	Detects: J Non-detects: UJ

Notes:

SDG = Sample delivery group
RSD = Relative standard deviation
ID = Identification
Bold = Above the 15% control limit.
J = Estimated value; one or more quality control parameters for calibration were outside control limits.
UJ = Undetected and estimated; one or more quality control parameters for calibration were outside control limits.

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	TB01-WQ-120516	TJ0283-1	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	FB-01-WQ-120516	TJ0283-5	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE103D1-GW-120516	TJ0283-2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE103D2-GW-120516	TJ0283-3	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE103D3-GW-120516	TJ0283-4	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE104D3-GW-120516	TJ0283-8	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	DUP01-GW-120516	TJ0283-9	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE131D1-GW-120616	TJ0283-10	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE131D2-GW-120616	TJ0283-11	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE131D3-GW-120616	TJ0283-12	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE126D1-GW-120616	TJ0283-13	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE126D2-GW-120616	TJ0283-14	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE126D3-GW-120616	TJ0283-15	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE104D1-GW-120516	TJ0283-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE131D1-GW-120616	TJ0283-10RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE126D3-GW-120616	TJ0283-15RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE131D2-GW-120616	TJ0283-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE104D2-GW-120516	TJ0283-7	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	TB02-WQ-120716	TJ0411-1	Detects: J Non-detects: UJ

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	FB-02-WQ-120816	TJ0411-8	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE103D1-GW-120516	TJ0283-2DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE103D2-GW-120516	TJ0283-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE103D3-GW-120516	TJ0283-4DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE126D2-GW-120616	TJ0283-14DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE125D1-GW-120716	TJ0411-2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE125D2-GW-120716	TJ0411-3	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE125D3-GW-120716	TJ0411-4	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE123D1-GW-120716	TJ0411-5	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE123D2-GW-120716	TJ0411-6	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE123D3-GW-120716	TJ0411-7	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE128D1-GW-120816	TJ0411-9	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE128D2-GW-120816	TJ0411-10	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE125D1-GW-120716	TJ0411-2RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE125D2-GW-120716	TJ0411-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE125D3-GW-120716	TJ0411-4RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE123D1-GW-120716	TJ0411-5RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE123D2-GW-120716	TJ0411-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE122D1-GW-120816	TJ0411-11DL	Detects: J Non-detects: UJ

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	Dichlorodifluoromethane	P7938.D	**77.27**	80-120	RE122D2-GW-120816	TJ0411-12DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	TB01-WQ-120516	TJ0283-1	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	FB-01-WQ-120516	TJ0283-5	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE103D1-GW-120516	TJ0283-2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE103D2-GW-120516	TJ0283-3	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE103D3-GW-120516	TJ0283-4	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE104D3-GW-120516	TJ0283-8	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	DUP01-GW-120516	TJ0283-9	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE131D1-GW-120616	TJ0283-10	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE131D2-GW-120616	TJ0283-11	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE131D3-GW-120616	TJ0283-12	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE126D1-GW-120616	TJ0283-13	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE126D2-GW-120616	TJ0283-14	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE126D3-GW-120616	TJ0283-15	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE104D1-GW-120516	TJ0283-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE131D1-GW-120616	TJ0283-10RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE126D3-GW-120616	TJ0283-15RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE131D2-GW-120616	TJ0283-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE104D2-GW-120516	TJ0283-7	Detects: J Non-detects: UJ

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	TB02-WQ-120716	TJ0411-1	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	FB-02-WQ-120816	TJ0411-8	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE103D1-GW-120516	TJ0283-2DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE103D2-GW-120516	TJ0283-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE103D3-GW-120516	TJ0283-4DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE126D2-GW-120616	TJ0283-14DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE125D1-GW-120716	TJ0411-2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE125D2-GW-120716	TJ0411-3	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE125D3-GW-120716	TJ0411-4	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE123D1-GW-120716	TJ0411-5	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE123D2-GW-120716	TJ0411-6	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE123D3-GW-120716	TJ0411-7	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE128D1-GW-120816	TJ0411-9	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE128D2-GW-120816	TJ0411-10	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE125D1-GW-120716	TJ0411-2RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE125D2-GW-120716	TJ0411-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE125D3-GW-120716	TJ0411-4RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE123D1-GW-120716	TJ0411-5RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE123D2-GW-120716	TJ0411-6RA	Detects: J Non-detects: UJ

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE122D1-GW-120816	TJ0411-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P7938.D	**122.30**	80-120	RE122D2-GW-120816	TJ0411-12DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE122D3-GW-120816	TJ0411-13RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	DUP02-GW-120816	TJ0411-14	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE122D1-GW-120816	TJ0411-11	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE122D2-GW-120816	TJ0411-12DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE120D1-GW-120916	TJ0502-2DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE120D2-GW-120916	TJ0502-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE120D3-GW-120916	TJ0502-4	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE117D1-GW-120916	TJ0502-5	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE117D2-GW-120916	TJ0502-6	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE105D1-GW-121216	TJ0502-7	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE105D2-GW-121216	TJ0502-8DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE108D1-GW-121216	TJ0502-9	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE108D2-GW-121216	TJ0502-10DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	TT101D-GW-121216	TJ0502-11	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	TT101D2-GW-121216	TJ0502-13DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	TB03-WQ-120916	TJ0502-1	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE120D2-GW-120916	TJ0502-3	Detects: J Non-detects: UJ

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	TT101D1-GW-121216	TJ0502-12	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE120D1-GW-120916	TJ0502-2DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	TT101D2-GW-121216	TJ0502-13DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE105D2-GW-121216	TJ0502-8DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Dichlorodifluoromethane	P8166A.D	**61.77**	80-120	RE108D2-GW-121216	TJ0502-10DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE122D3-GW-120816	TJ0411-13RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	DUP02-GW-120816	TJ0411-14	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE122D1-GW-120816	TJ0411-11	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE122D2-GW-120816	TJ0411-12DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE120D1-GW-120916	TJ0502-2DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE120D2-GW-120916	TJ0502-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE120D3-GW-120916	TJ0502-4	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE117D1-GW-120916	TJ0502-5	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE117D2-GW-120916	TJ0502-6	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE105D1-GW-121216	TJ0502-7	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE105D2-GW-121216	TJ0502-8DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE108D1-GW-121216	TJ0502-9	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE108D2-GW-121216	TJ0502-10DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	TT101D-GW-121216	TJ0502-11	Detects: J Non-detects: UJ

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	TT101D2-GW-121216	TJ0502-13DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	TB03-WQ-120916	TJ0502-1	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE120D2-GW-120916	TJ0502-3	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	TT101D1-GW-121216	TJ0502-12	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE120D1-GW-120916	TJ0502-2DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	TT101D2-GW-121216	TJ0502-13DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE105D2-GW-121216	TJ0502-8DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	Acetone	P8166A.D	**124.69**	80-120	RE108D2-GW-121216	TJ0502-10DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE122D3-GW-120816	TJ0411-13RA	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	DUP02-GW-120816	TJ0411-14	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE122D1-GW-120816	TJ0411-11	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE122D2-GW-120816	TJ0411-12DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE120D1-GW-120916	TJ0502-2DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE120D2-GW-120916	TJ0502-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE120D3-GW-120916	TJ0502-4	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE117D1-GW-120916	TJ0502-5	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE117D2-GW-120916	TJ0502-6	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE105D1-GW-121216	TJ0502-7	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE105D2-GW-121216	TJ0502-8DL	Detects: J Non-detects: UJ

Table A-2
Initial Calibration Verification Non-Conformance

SDG	Method	Analyte	ICV ID	%R	Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE108D1-GW-121216	TJ0502-9	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE108D2-GW-121216	TJ0502-10DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	TT101D-GW-121216	TJ0502-11	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	TT101D2-GW-121216	TJ0502-13DL	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	TB03-WQ-120916	TJ0502-1	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE120D2-GW-120916	TJ0502-3	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	TT101D1-GW-121216	TJ0502-12	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE120D1-GW-120916	TJ0502-2DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	TT101D2-GW-121216	TJ0502-13DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE105D2-GW-121216	TJ0502-8DL2	Detects: J Non-detects: UJ
BETHPAGE 8	8260C	2-Hexanone	P8166A.D	**127.45**	80-120	RE108D2-GW-121216	TJ0502-10DL2	Detects: J Non-detects: UJ

Notes:
SDG = Sample delivery group
ICV = Initial calibration verification
ID = Identification
%R = Percent recovery
Bold = Outside the 80-120 control limit.
J = Estimated value; one or more quality control parameters for calibration were outside control limits.
UJ = Undetected and estimated; one or more quality control parameters for calibration were outside control limits.

Table A-3
Continuing Calibration Verification Non-Conformance

SDG	Lab ID/ Calibration ID	Analyte	%D	%D Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	TB01-WQ-120516	TJ0283-1	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	FB-01-WQ-120516	TJ0283-5	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE103D1-GW-120516	TJ0283-2	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE103D2-GW-120516	TJ0283-3	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE103D3-GW-120516	TJ0283-4	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE104D3-GW-120516	TJ0283-8	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	DUP01-GW-120516	TJ0283-9	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE131D1-GW-120616	TJ0283-10	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE131D2-GW-120616	TJ0283-11	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE131D3-GW-120616	TJ0283-12	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE126D1-GW-120616	TJ0283-13	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE126D2-GW-120616	TJ0283-14	Detects: J Non-detects: UJ
BETHPAGE 8	WG196368-4 P8063.D	Trichlorofluoromethane	**26.83847**	+/- 20%	RE126D3-GW-120616	TJ0283-15	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Bromomethane	**-21.17583**	+/- 20%	RE104D1-GW-120516	TJ0283-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Bromomethane	**-21.17583**	+/- 20%	RE131D1-GW-120616	TJ0283-10RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Bromomethane	**-21.17583**	+/- 20%	RE126D3-GW-120616	TJ0283-15RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Bromomethane	**-21.17583**	+/- 20%	RE131D2-GW-120616	TJ0283-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Bromomethane	**-21.17583**	+/- 20%	RE104D2-GW-120516	TJ0283-7	Detects: J Non-detects: UJ

Table A-3
Continuing Calibration Verification Non-Conformance

SDG	Lab ID/ Calibration ID	Analyte	%D	%D Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	WG196503-4 P8084.D	Trichlorofluoromethane	**35.44312**	+/- 20%	RE104D1-GW-120516	TJ0283-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Trichlorofluoromethane	**35.44312**	+/- 20%	RE131D1-GW-120616	TJ0283-10RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Trichlorofluoromethane	**35.44312**	+/- 20%	RE126D3-GW-120616	TJ0283-15RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Trichlorofluoromethane	**35.44312**	+/- 20%	RE131D2-GW-120616	TJ0283-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	Trichlorofluoromethane	**35.44312**	+/- 20%	RE104D2-GW-120516	TJ0283-7	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	1,1,2-Trichloro-1,2,2-trifluoroethane	**20.42494**	+/- 20%	RE104D1-GW-120516	TJ0283-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	1,1,2-Trichloro-1,2,2-trifluoroethane	**20.42494**	+/- 20%	RE131D1-GW-120616	TJ0283-10RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	1,1,2-Trichloro-1,2,2-trifluoroethane	**20.42494**	+/- 20%	RE126D3-GW-120616	TJ0283-15RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	1,1,2-Trichloro-1,2,2-trifluoroethane	**20.42494**	+/- 20%	RE131D2-GW-120616	TJ0283-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196503-4 P8084.D	1,1,2-Trichloro-1,2,2-trifluoroethane	**20.42494**	+/- 20%	RE104D2-GW-120516	TJ0283-7	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	TB02-WQ-120716	TJ0411-1	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	FB-02-WQ-120816	TJ0411-8	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE103D1-GW-120516	TJ0283-2DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE103D2-GW-120516	TJ0283-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE103D3-GW-120516	TJ0283-4DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE126D2-GW-120616	TJ0283-14DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE125D1-GW-120716	TJ0411-2	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE125D2-GW-120716	TJ0411-3	Detects: J Non-detects: UJ

Table A-3
Continuing Calibration Verification Non-Conformance

SDG	Lab ID/ Calibration ID	Analyte	%D	%D Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE125D3-GW-120716	TJ0411-4	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE123D1-GW-120716	TJ0411-5	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE123D2-GW-120716	TJ0411-6	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE123D3-GW-120716	TJ0411-7	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE128D1-GW-120816	TJ0411-9	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	Trichlorofluoromethane	**32.81344**	+/- 20%	RE128D2-GW-120816	TJ0411-10	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	TB02-WQ-120716	TJ0411-1	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	FB-02-WQ-120816	TJ0411-8	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE103D1-GW-120516	TJ0283-2DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE103D2-GW-120516	TJ0283-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE103D3-GW-120516	TJ0283-4DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE126D2-GW-120616	TJ0283-14DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE125D1-GW-120716	TJ0411-2	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE125D2-GW-120716	TJ0411-3	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE125D3-GW-120716	TJ0411-4	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE123D1-GW-120716	TJ0411-5	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE123D2-GW-120716	TJ0411-6	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE123D3-GW-120716	TJ0411-7	Detects: J Non-detects: UJ

Table A-3
Continuing Calibration Verification Non-Conformance

SDG	Lab ID/ Calibration ID	Analyte	%D	%D Limit	Associated Samples	Lab ID	Qualifiers
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE128D1-GW-120816	TJ0411-9	Detects: J Non-detects: UJ
BETHPAGE 8	WG196573-4 P8106.D	1,2-Dichloroethane	**20.88616**	+/- 20%	RE128D2-GW-120816	TJ0411-10	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Dichlorodifluoromethane	**28.9063**	+/- 20%	RE125D1-GW-120716	TJ0411-2RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Dichlorodifluoromethane	**28.9063**	+/- 20%	RE125D2-GW-120716	TJ0411-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Dichlorodifluoromethane	**28.9063**	+/- 20%	RE125D3-GW-120716	TJ0411-4RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Dichlorodifluoromethane	**28.9063**	+/- 20%	RE123D1-GW-120716	TJ0411-5RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Dichlorodifluoromethane	**28.9063**	+/- 20%	RE123D2-GW-120716	TJ0411-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Dichlorodifluoromethane	**28.9063**	+/- 20%	RE122D1-GW-120816	TJ0411-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Dichlorodifluoromethane	**28.9063**	+/- 20%	RE122D2-GW-120816	TJ0411-12DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Trichlorofluoromethane	**54.45973**	+/- 20%	RE125D1-GW-120716	TJ0411-2RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Trichlorofluoromethane	**54.45973**	+/- 20%	RE125D2-GW-120716	TJ0411-3DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Trichlorofluoromethane	**54.45973**	+/- 20%	RE125D3-GW-120716	TJ0411-4RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Trichlorofluoromethane	**54.45973**	+/- 20%	RE123D1-GW-120716	TJ0411-5RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Trichlorofluoromethane	**54.45973**	+/- 20%	RE123D2-GW-120716	TJ0411-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Trichlorofluoromethane	**54.45973**	+/- 20%	RE122D1-GW-120816	TJ0411-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	Trichlorofluoromethane	**54.45973**	+/- 20%	RE122D2-GW-120816	TJ0411-12DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	1,2-Dichloroethane	**25.40055**	+/- 20%	RE125D1-GW-120716	TJ0411-2RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	1,2-Dichloroethane	**25.40055**	+/- 20%	RE125D2-GW-120716	TJ0411-3DL	Detects: J Non-detects: UJ

Table A-3 Continuing Calibration Verification Non-Conformance							
SDG	**Lab ID/ Calibration ID**	**Analyte**	**%D**	**%D Limit**	**Associated Samples**	**Lab ID**	**Qualifiers**
BETHPAGE 8	WG196635-4 P8129.D	1,2-Dichloroethane	**25.40055**	+/- 20%	RE125D3-GW-120716	TJ0411-4RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	1,2-Dichloroethane	**25.40055**	+/- 20%	RE123D1-GW-120716	TJ0411-5RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	1,2-Dichloroethane	**25.40055**	+/- 20%	RE123D2-GW-120716	TJ0411-6RA	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	1,2-Dichloroethane	**25.40055**	+/- 20%	RE122D1-GW-120816	TJ0411-11DL	Detects: J Non-detects: UJ
BETHPAGE 8	WG196635-4 P8129.D	1,2-Dichloroethane	**25.40055**	+/- 20%	RE122D2-GW-120816	TJ0411-12DL	Detects: J Non-detects: UJ

Notes:

SDG = Sample delivery group
ID = Identification
%D = Percent difference
Bold = Outside the +/-20% control limit.
J = Estimated value; one or more quality control parameters for calibration were outside control limits.
UJ = Undetected and estimated; one or more quality control parameters for calibration were outside control limits.

Table A-4 Field Blank Non-Conformance							
SDG	**Blank**	**Lab Sample ID**	**Analyte**	**Blank Results (UG_L)**	**Associated Sample**	**Associated Samples LOQ**	**Detected Associated Sample Qualified U**
BETHPAGE 8	FB-01-WQ-120516	TJ0283-5	Carbon Disulfide	0.58	DUP01-GW-120516 RE103D1-GW-120516 RE103D2-GW-120516 RE103D3-GW-120516 RE104D1-GW-120516 RE104D2-GW-120516 RE104D3-GW-120516	1.0	DUP01-GW-120516 RE103D1-GW-120516 RE103D2-GW-120516 RE103D3-GW-120516
BETHPAGE 8	TB01-WQ-120516	TJ0283-1	Carbon Disulfide	0.58	DUP01-GW-120516 RE103D1-GW-120516 RE103D2-GW-120516 RE103D3-GW-120516 RE104D1-GW-120516 RE104D2-GW-120516 RE104D3-GW-120516 RE126D1-GW-120616 RE126D2-GW-120616 RE126D3-GW-120616 RE131D1-GW-120616 RE131D2-GW-120616 RE131D3-GW-120616	1.0	RE131D1-GW-120616 RE131D3-GW-120616

Notes:

SDG = Sample delivery group
ID = Identification
UG_L = Micrograms per liter
LOQ = Limit of quantitation
U = Associated samples qualified undetected "U" due to blank detections.

Table A-5 Laboratory Blank Non-Conformance							
SDG	**Blank ID**	**Batches**	**Analyte**	**Blank Result (UG_L)**	**Associated Samples**	**Associated Samples LOQ**	**Detected Associated Sample Qualified U**
BETHPAGE 8	WG196368-2	WG196368	Carbon Disulfide	0.48	FB-01-WQ-120516 TB01-WQ-120516	1.0	FB-01-WQ-120516 TB01-WQ-120516

Notes:

SDG = Sample delivery group
ID = Identification
UG_L = Micrograms per liter
LOQ = Limit of quantitation
U = Associated samples qualified undetected "U" due to lab blank detections.

Table A-6
Surrogate Spike Recovery Non-Conformance

SDG	Sample ID	Laboratory ID	Batch	Surrogate	%R	Control Limit	Qualifier
BETHPAGE-8	RE103D1-GW-120516	TJ0283-2DL	WG196573	1,2-Dichloroethane-D4	**124**	70-120	Detects: J
BETHPAGE-8	RE103D2-GW-120516	TJ0283-3DL	WG196573	1,2-Dichloroethane-D4	**125**	70-120	Detects: J
BETHPAGE-8	RE103D2-GW-120516	TJ0283-3	WG196368	1,2-Dichloroethane-D4	**121**	70-120	Detects: J
BETHPAGE-8	RE103D3-GW-120516	TJ0283-4DL	WG196573	1,2-Dichloroethane-D4	**123**	70-120	Detects: J
BETHPAGE-8	RE104D2-GW-120516	TJ0283-7	WG196503	1,2-Dichloroethane-D4	**124**	70-120	Detects: J
BETHPAGE-8	RE122D1-GW-120816	TJ0411-11DL	WG196635	1,2-Dichloroethane-D4	**133**	70-120	Detects: J
BETHPAGE-8	RE122D2-GW-120816	TJ0411-12DL	WG196635	1,2-Dichloroethane-D4	**130**	70-120	Detects: J
BETHPAGE-8	RE123D1-GW-120716	TJ0411-5	WG196573	1,2-Dichloroethane-D4	**129**	70-120	Detects: J
BETHPAGE-8	RE123D1-GW-120716	TJ0411-5RA	WG196635	1,2-Dichloroethane-D4	**132**	70-120	Detects: J
BETHPAGE-8	RE123D2-GW-120716	TJ0411-6	WG196573	1,2-Dichloroethane-D4	**127**	70-120	Detects: J
BETHPAGE-8	RE123D2-GW-120716	TJ0411-6RA	WG196635	1,2-Dichloroethane-D4	**136**	70-120	Detects: J
BETHPAGE-8	RE123D2-GW-120716	TJ0411-6RA	WG196635	Dibromofluoromethane	**116**	85-115	Detects: J
BETHPAGE-8	RE125D1-GW-120716	TJ0411-2	WG196573	1,2-Dichloroethane-D4	**123**	70-120	Detects: J
BETHPAGE-8	RE125D1-GW-120716	TJ0411-2RA	WG196635	1,2-Dichloroethane-D4	**128**	70-120	Detects: J
BETHPAGE-8	RE125D2-GW-120716	TJ0411-3	WG196573	1,2-Dichloroethane-D4	**124**	70-120	Detects: J
BETHPAGE-8	RE125D2-GW-120716	TJ0411-3DL	WG196635	1,2-Dichloroethane-D4	**128**	70-120	Detects: J
BETHPAGE-8	RE125D3-GW-120716	TJ0411-4	WG196573	1,2-Dichloroethane-D4	**126**	70-120	Detects: J
BETHPAGE-8	RE125D3-GW-120716	TJ0411-4RA	WG196635	1,2-Dichloroethane-D4	**133**	70-120	Detects: J
BETHPAGE-8	RE126D2-GW-120616	TJ0283-14DL	WG196573	1,2-Dichloroethane-D4	**127**	70-120	Detects: J
BETHPAGE-8	RE126D3-GW-120616	TJ0283-15RA	WG196503	1,2-Dichloroethane-D4	**121**	70-120	Detects: J
BETHPAGE-8	RE131D1-GW-120616	TJ0283-10RA	WG196503	1,2-Dichloroethane-D4	**123**	70-120	Detects: J
BETHPAGE-8	RE131D1-GW-120616	TJ0283-10	WG196368	1,2-Dichloroethane-D4	**121**	70-120	Detects: J
BETHPAGE-8	RE131D2-GW-120616	TJ0283-11DL	WG196503	1,2-Dichloroethane-D4	**124**	70-120	Detects: J
BETHPAGE-8	RE131D2-GW-120616	TJ0283-11	WG196368	1,2-Dichloroethane-D4	**123**	70-120	Detects: J

Notes:
SDG = Sample delivery group
ID = Identification
%R = Percent recovery
Bold = Outside control limits
J = Estimated value; one or more quality control parameters for calibration were outside control limits.

Table A-7 Matrix Spike / Matrix Spike Duplicate Percent Recovery Non-Conformance								
SDG	**Method**	**Spiked Sample ID**	**Analyte**	**Sample Result (UG_L)**	**MS %R**	**MSD %R**	**%R Limit**	**Qualifier**
BETHPAGE-8	8260C	RE122D2-GW-120816DL2	1,1,2-Trichloro-1,2,2-trifluoroethane	15	76.6	**71.4**	73-126	J

Notes:

SDG = Sample delivery group
ID = Identification
UG_L = Micrograms per liter
MS = Matrix spike
MSD = Matrix spike duplicate
%R = Percent recovery
Bold = %R outside of control limits
J = Analyte in associated sample qualified estimated "J" because %R is lower than the control limit and may be biased low.

Attachment B
Qualified Results Summary

Table B-1
Qualified Results Summary

Method	Sample ID	Laboratory ID	Sample Date	DF	Analyte	Result	Units	Laboratory Qualifier	Validator Qualifier	Final Qualifier	RC
8260C	DUP01-GW-120516	TJ0283-9	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	DUP01-GW-120516	TJ0283-9	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	DUP01-GW-120516	TJ0283-9	12/5/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bf
8260C	DUP01-GW-120516	TJ0283-9	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	DUP01-GW-120516	TJ0283-9	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	DUP02-GW-120816	TJ0411-14	12/8/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	DUP02-GW-120816	TJ0411-14	12/8/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	DUP02-GW-120816	TJ0411-14	12/8/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	FB-01-WQ-120516	TJ0283-5	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	FB-01-WQ-120516	TJ0283-5	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	FB-01-WQ-120516	TJ0283-5	12/5/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bl
8260C	FB-01-WQ-120516	TJ0283-5	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	FB-01-WQ-120516	TJ0283-5	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	FB-02-WQ-120816	TJ0411-8	12/8/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	FB-02-WQ-120816	TJ0411-8	12/8/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	FB-02-WQ-120816	TJ0411-8	12/8/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	FB-02-WQ-120816	TJ0411-8	12/8/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	FB-02-WQ-120816	TJ0411-8	12/8/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D1-GW-120516	TJ0283-2	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE103D1-GW-120516	TJ0283-2	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D1-GW-120516	TJ0283-2	12/5/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bf
8260C	RE103D1-GW-120516	TJ0283-2	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D1-GW-120516	TJ0283-2	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D1-GW-120516	TJ0283-2DL	12/5/2016	10	TRICHLOROETHENE	940	UG_L		J	J	s
8260C	RE103D2-GW-120516	TJ0283-3	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE103D2-GW-120516	TJ0283-3	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D2-GW-120516	TJ0283-3	12/5/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bf
8260C	RE103D2-GW-120516	TJ0283-3	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D2-GW-120516	TJ0283-3	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D2-GW-120516	TJ0283-3DL	12/5/2016	10	TRICHLOROETHENE	780	UG_L		J	J	s
8260C	RE103D3-GW-120516	TJ0283-4	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE103D3-GW-120516	TJ0283-4	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D3-GW-120516	TJ0283-4	12/5/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bf
8260C	RE103D3-GW-120516	TJ0283-4	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D3-GW-120516	TJ0283-4	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE103D3-GW-120516	TJ0283-4DL	12/5/2016	10	TRICHLOROETHENE	500	UG_L		J	J	s
8260C	RE104D1-GW-120516	TJ0283-6RA	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE104D1-GW-120516	TJ0283-6RA	12/5/2016	1	BROMOMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D1-GW-120516	TJ0283-6RA	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D1-GW-120516	TJ0283-6RA	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D1-GW-120516	TJ0283-6RA	12/5/2016	1	DICHLORODIFLUOROMETHANE	0.40	UG_L	J	J	J	c

Table B-1
Qualified Results Summary

Method	Sample ID	Laboratory ID	Sample Date	DF	Analyte	Result	Units	Laboratory Qualifier	Validator Qualifier	Final Qualifier	RC
8260C	RE104D1-GW-120516	TJ0283-6RA	12/5/2016	1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	3.0	UG_L		J	J	c
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	CIS-1,2-DICHLOROETHENE	3.1	UG_L		J	J	s
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	1,2-DICHLOROETHENE, TOTAL	3.1	UG_L		J	J	s
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	CHLOROFORM	0.54	UG_L	J	J	J	s
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	BROMOMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	UM	J	UJ	c
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE104D2-GW-120516	TJ0283-7	12/5/2016	1	TRICHLOROETHENE	10	UG_L		J	J	s
8260C	RE104D3-GW-120516	TJ0283-8	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE104D3-GW-120516	TJ0283-8	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D3-GW-120516	TJ0283-8	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE104D3-GW-120516	TJ0283-8	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE105D1-GW-121216	TJ0502-7	12/12/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE105D1-GW-121216	TJ0502-7	12/12/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	RE105D1-GW-121216	TJ0502-7	12/12/2016	1	DICHLORODIFLUOROMETHANE	0.40	UG_L	J	J	J	c
8260C	RE105D2-GW-121216	TJ0502-8DL2	12/12/2016	4	2-HEXANONE	<10	UG_L	U	J	UJ	c
8260C	RE105D2-GW-121216	TJ0502-8DL2	12/12/2016	4	ACETONE	<10	UG_L	U	J	UJ	c
8260C	RE105D2-GW-121216	TJ0502-8DL2	12/12/2016	4	DICHLORODIFLUOROMETHANE	<4.0	UG_L	U	J	UJ	c
8260C	RE108D1-GW-121216	TJ0502-9	12/12/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE108D1-GW-121216	TJ0502-9	12/12/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	RE108D1-GW-121216	TJ0502-9	12/12/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE108D2-GW-121216	TJ0502-10DL2	12/12/2016	5	2-HEXANONE	<12	UG_L	U	J	UJ	c
8260C	RE108D2-GW-121216	TJ0502-10DL2	12/12/2016	5	ACETONE	<12	UG_L	U	J	UJ	c
8260C	RE108D2-GW-121216	TJ0502-10DL2	12/12/2016	5	DICHLORODIFLUOROMETHANE	<5.0	UG_L	U	J	UJ	c
8260C	RE117D1-GW-120916	TJ0502-5	12/9/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE117D1-GW-120916	TJ0502-5	12/9/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	RE117D1-GW-120916	TJ0502-5	12/9/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE117D2-GW-120916	TJ0502-6	12/9/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE117D2-GW-120916	TJ0502-6	12/9/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	RE117D2-GW-120916	TJ0502-6	12/9/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE120D1-GW-120916	TJ0502-2DL2	12/9/2016	2	2-HEXANONE	<5.0	UG_L	U	J	UJ	c
8260C	RE120D1-GW-120916	TJ0502-2DL2	12/9/2016	2	ACETONE	<5.0	UG_L	U	J	UJ	c
8260C	RE120D1-GW-120916	TJ0502-2DL2	12/9/2016	2	DICHLORODIFLUOROMETHANE	<2.0	UG_L	U	J	UJ	c
8260C	RE120D2-GW-120916	TJ0502-3	12/9/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE120D2-GW-120916	TJ0502-3	12/9/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	RE120D2-GW-120916	TJ0502-3	12/9/2016	1	DICHLORODIFLUOROMETHANE	0.41	UG_L	J	J	J	c
8260C	RE120D3-GW-120916	TJ0502-4	12/9/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE120D3-GW-120916	TJ0502-4	12/9/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c

Table B-1
Qualified Results Summary

Method	Sample ID	Laboratory ID	Sample Date	DF	Analyte	Result	Units	Laboratory Qualifier	Validator Qualifier	Final Qualifier	RC
8260C	RE120D3-GW-120916	TJ0502-4	12/9/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE122D1-GW-120816	TJ0411-11DL	12/8/2016	10	TRICHLOROETHENE	520	UG_L		J	J	s
8260C	RE122D1-GW-120816	TJ0411-11	12/8/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE122D1-GW-120816	TJ0411-11	12/8/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	RE122D1-GW-120816	TJ0411-11	12/8/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE122D2-GW-120816	TJ0411-12DL	12/8/2016	40	TRICHLOROETHENE	5300	UG_L	MM	J	J	s
8260C	RE122D2-GW-120816	TJ0411-12DL2	12/8/2016	4	2-HEXANONE	<10	UG_L	U	J	UJ	c
8260C	RE122D2-GW-120816	TJ0411-12DL2	12/8/2016	4	ACETONE	<10	UG_L	U	J	UJ	c
8260C	RE122D2-GW-120816	TJ0411-12DL2	12/8/2016	4	DICHLORODIFLUOROMETHANE	<4.0	UG_L	U	J	UJ	c
8260C	RE122D2-GW-120816	TJ0411-12DL2	12/8/2016	4	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	15	UG_L	M	J	J	m
8260C	RE122D3-GW-120816	TJ0411-13RA	12/8/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE122D3-GW-120816	TJ0411-13RA	12/8/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	RE122D3-GW-120816	TJ0411-13RA	12/8/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D1-GW-120716	TJ0411-5	12/7/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE123D1-GW-120716	TJ0411-5	12/7/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE123D1-GW-120716	TJ0411-5	12/7/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D1-GW-120716	TJ0411-5	12/7/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D1-GW-120716	TJ0411-5	12/7/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D1-GW-120716	TJ0411-5	12/7/2016	1	TRICHLOROETHENE	7.3	UG_L		J	J	s
8260C	RE123D2-GW-120716	TJ0411-6	12/7/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE123D2-GW-120716	TJ0411-6	12/7/2016	1	TETRACHLOROETHENE	1.0	UG_L		J	J	s
8260C	RE123D2-GW-120716	TJ0411-6	12/7/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE123D2-GW-120716	TJ0411-6	12/7/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D2-GW-120716	TJ0411-6	12/7/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D2-GW-120716	TJ0411-6	12/7/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D2-GW-120716	TJ0411-6	12/7/2016	1	TRICHLOROETHENE	1.8	UG_L		J	J	s
8260C	RE123D3-GW-120716	TJ0411-7	12/7/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE123D3-GW-120716	TJ0411-7	12/7/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE123D3-GW-120716	TJ0411-7	12/7/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D3-GW-120716	TJ0411-7	12/7/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE123D3-GW-120716	TJ0411-7	12/7/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	TETRACHLOROETHENE	6.4	UG_L		J	J	s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	CIS-1,2-DICHLOROETHENE	4.2	UG_L		J	J	s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	1,2-DICHLOROETHENE, TOTAL	4.2	UG_L		J	J	s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	CARBON TETRACHLORIDE	0.26	UG_L	J	J	J	s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	CHLOROFORM	0.73	UG_L	J	J	J	s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	1,1-DICHLOROETHANE	2.4	UG_L		J	J	s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	1,1-DICHLOROETHENE	2.5	UG_L		J	J	s

Table B-1
Qualified Results Summary

Method	Sample ID	Laboratory ID	Sample Date	DF	Analyte	Result	Units	Laboratory Qualifier	Validator Qualifier	Final Qualifier	RC
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	DICHLORODIFLUOROMETHANE	0.53	UG_L	J	J	J	c,s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	14	UG_L		J	J	s
8260C	RE125D1-GW-120716	TJ0411-2	12/7/2016	1	TRICHLOROETHENE	180	UG_L		J	J	s
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	TETRACHLOROETHENE	3.2	UG_L		J	J	s
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	CIS-1,2-DICHLOROETHENE	3.4	UG_L		J	J	s
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	1,2-DICHLOROETHENE, TOTAL	3.4	UG_L		J	J	s
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	1,1,1-TRICHLOROETHANE	0.73	UG_L	J	J	J	s
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	1,1-DICHLOROETHENE	6.7	UG_L		J	J	s
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	TRICHLOROFLUOROMETHANE	0.41	UG_L	J	J	J	c,s
8260C	RE125D2-GW-120716	TJ0411-3	12/7/2016	1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	25	UG_L		J	J	s
8260C	RE125D2-GW-120716	TJ0411-3DL	12/7/2016	2	DICHLORODIFLUOROMETHANE	<2.0	UG_L	U	J	UJ	c
8260C	RE125D2-GW-120716	TJ0411-3DL	12/7/2016	2	TRICHLOROETHENE	240	UG_L		J	J	s
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	TETRACHLOROETHENE	1.6	UG_L		J	J	s
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	CIS-1,2-DICHLOROETHENE	1.5	UG_L		J	J	s
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	1,2-DICHLOROETHENE, TOTAL	1.5	UG_L	J	J	J	s
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	1,1-DICHLOROETHENE	0.84	UG_L	J	J	J	s
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	36	UG_L		J	J	s
8260C	RE125D3-GW-120716	TJ0411-4	12/7/2016	1	TRICHLOROETHENE	150	UG_L		J	J	s
8260C	RE125D3-GW-120716	TJ0411-4RA	12/7/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D1-GW-120616	TJ0283-13	12/6/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE126D1-GW-120616	TJ0283-13	12/6/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D1-GW-120616	TJ0283-13	12/6/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D1-GW-120616	TJ0283-13	12/6/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D2-GW-120616	TJ0283-14	12/6/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE126D2-GW-120616	TJ0283-14	12/6/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D2-GW-120616	TJ0283-14	12/6/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D2-GW-120616	TJ0283-14	12/6/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D2-GW-120616	TJ0283-14DL	12/6/2016	10	TRICHLOROETHENE	530	UG_L		J	J	s
8260C	RE126D3-GW-120616	TJ0283-15	12/6/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE126D3-GW-120616	TJ0283-15	12/6/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D3-GW-120616	TJ0283-15	12/6/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE126D3-GW-120616	TJ0283-15	12/6/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE128D1-GW-120816	TJ0411-9	12/8/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c

Table B-1
Qualified Results Summary

Method	Sample ID	Laboratory ID	Sample Date	DF	Analyte	Result	Units	Laboratory Qualifier	Validator Qualifier	Final Qualifier	RC
8260C	RE128D1-GW-120816	TJ0411-9	12/8/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE128D1-GW-120816	TJ0411-9	12/8/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE128D1-GW-120816	TJ0411-9	12/8/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE128D1-GW-120816	TJ0411-9	12/8/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE128D2-GW-120816	TJ0411-10	12/8/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	RE128D2-GW-120816	TJ0411-10	12/8/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE128D2-GW-120816	TJ0411-10	12/8/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE128D2-GW-120816	TJ0411-10	12/8/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE128D2-GW-120816	TJ0411-10	12/8/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	TETRACHLOROETHENE	7.5	UG_L		J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	CIS-1,2-DICHLOROETHENE	4.2	UG_L		J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	METHYL TERT-BUTYL ETHER	0.54	UG_L	J	J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	1,2-DICHLOROETHENE, TOTAL	4.2	UG_L		J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	CARBON TETRACHLORIDE	0.25	UG_L	J	J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	CHLOROFORM	3.4	UG_L		J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	1,1-DICHLOROETHENE	0.82	UG_L	J	J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5.4	UG_L		J	J	s
8260C	RE131D1-GW-120616	TJ0283-10	12/6/2016	1	TRICHLOROETHENE	100	UG_L		J	J	s
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	TETRACHLOROETHENE	6.0	UG_L		J	J	s
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	CIS-1,2-DICHLOROETHENE	4.1	UG_L		J	J	s
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	1,2-DICHLOROETHENE, TOTAL	4.1	UG_L		J	J	s
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bt
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D2-GW-120616	TJ0283-11	12/6/2016	1	TRICHLOROETHENE	54	UG_L		J	J	s
8260C	RE131D2-GW-120616	TJ0283-11DL	12/6/2016	5	DICHLORODIFLUOROMETHANE	<5.0	UG_L	U	J	UJ	c
8260C	RE131D2-GW-120616	TJ0283-11DL	12/6/2016	5	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	250	UG_L		J	J	c,s
8260C	RE131D3-GW-120616	TJ0283-12	12/6/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	RE131D3-GW-120616	TJ0283-12	12/6/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D3-GW-120616	TJ0283-12	12/6/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bt
8260C	RE131D3-GW-120616	TJ0283-12	12/6/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	RE131D3-GW-120616	TJ0283-12	12/6/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	TB01-WQ-120516	TJ0283-1	12/5/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	TB01-WQ-120516	TJ0283-1	12/5/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	TB01-WQ-120516	TJ0283-1	12/5/2016	1	CARBON DISULFIDE	<0.50	UG_L	J	U	U	bl
8260C	TB01-WQ-120516	TJ0283-1	12/5/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c

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Qualified Results Summary

Method	Sample ID	Laboratory ID	Sample Date	DF	Analyte	Result	Units	Laboratory Qualifier	Validator Qualifier	Final Qualifier	RC
8260C	TB01-WQ-120516	TJ0283-1	12/5/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	TB02-WQ-120716	TJ0411-1	12/7/2016	1	1,2-DICHLOROETHANE	<0.50	UG_L	U	J	UJ	c
8260C	TB02-WQ-120716	TJ0411-1	12/7/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	TB02-WQ-120716	TJ0411-1	12/7/2016	1	CHLOROETHANE	<1.0	UG_L	U	J	UJ	c
8260C	TB02-WQ-120716	TJ0411-1	12/7/2016	1	TRICHLOROFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	TB02-WQ-120716	TJ0411-1	12/7/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	TB03-WQ-120916	TJ0502-1	12/12/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	TB03-WQ-120916	TJ0502-1	12/12/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	TB03-WQ-120916	TJ0502-1	12/12/2016	1	DICHLORODIFLUOROMETHANE	<1.0	UG_L	U	J	UJ	c
8260C	TT101D1-GW-121216	TJ0502-12	12/12/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	TT101D1-GW-121216	TJ0502-12	12/12/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	TT101D1-GW-121216	TJ0502-12	12/12/2016	1	DICHLORODIFLUOROMETHANE	1.7	UG_L	J	J	J	c
8260C	TT101D2-GW-121216	TJ0502-13DL2	12/12/2016	2	2-HEXANONE	<5.0	UG_L	U	J	UJ	c
8260C	TT101D2-GW-121216	TJ0502-13DL2	12/12/2016	2	ACETONE	<5.0	UG_L	U	J	UJ	c
8260C	TT101D2-GW-121216	TJ0502-13DL2	12/12/2016	2	DICHLORODIFLUOROMETHANE	<2.0	UG_L	U	J	UJ	c
8260C	TT101D-GW-121216	TJ0502-11	12/12/2016	1	2-HEXANONE	<2.5	UG_L	U	J	UJ	c
8260C	TT101D-GW-121216	TJ0502-11	12/12/2016	1	ACETONE	<2.5	UG_L	U	J	UJ	c
8260C	TT101D-GW-121216	TJ0502-11	12/12/2016	1	DICHLORODIFLUOROMETHANE	2.1	UG_L		J	J	c

Notes:
ID = Identification
DF = Dilution factor
RC = Reason code
UG_L = Micrograms per liter
U = ***Undetected*** — The parameter was analyzed but undetected or was qualified as undetected during data review due to blank artifacts.
J = ***Estimated Value*** — One or more quality control parameters were outside control limits or the analyte concentration was less than the limit of quantitation.
UJ = ***Undetected and Estimated*** — The parameter was analyzed but undetected and was estimated because of a quality control outlier.
M = Indicates that the analyte was outside of the control limits in the matrix spike/matrix spike duplicate prepared and/or analyzed concurrently with the native sample (laboratory qualifier.)

Qualification Reason Codes (multiple reason codes may be applied):
bf = Field blank contamination
bl = Lab blank contamination
bt = Trip blank contamination
c = Calibration issue
m = Matrix spike/matrix spike duplicate percent recovery
s = Surrogate spike percent recovery

Appendix C

Analytical Data Validation – ARCADIS

ARCADIS Design & Consultancy for natural and built assets

Navy Wells

~~Northrop Grumman~~ Corporation -

Operable Unit 2

Data Review

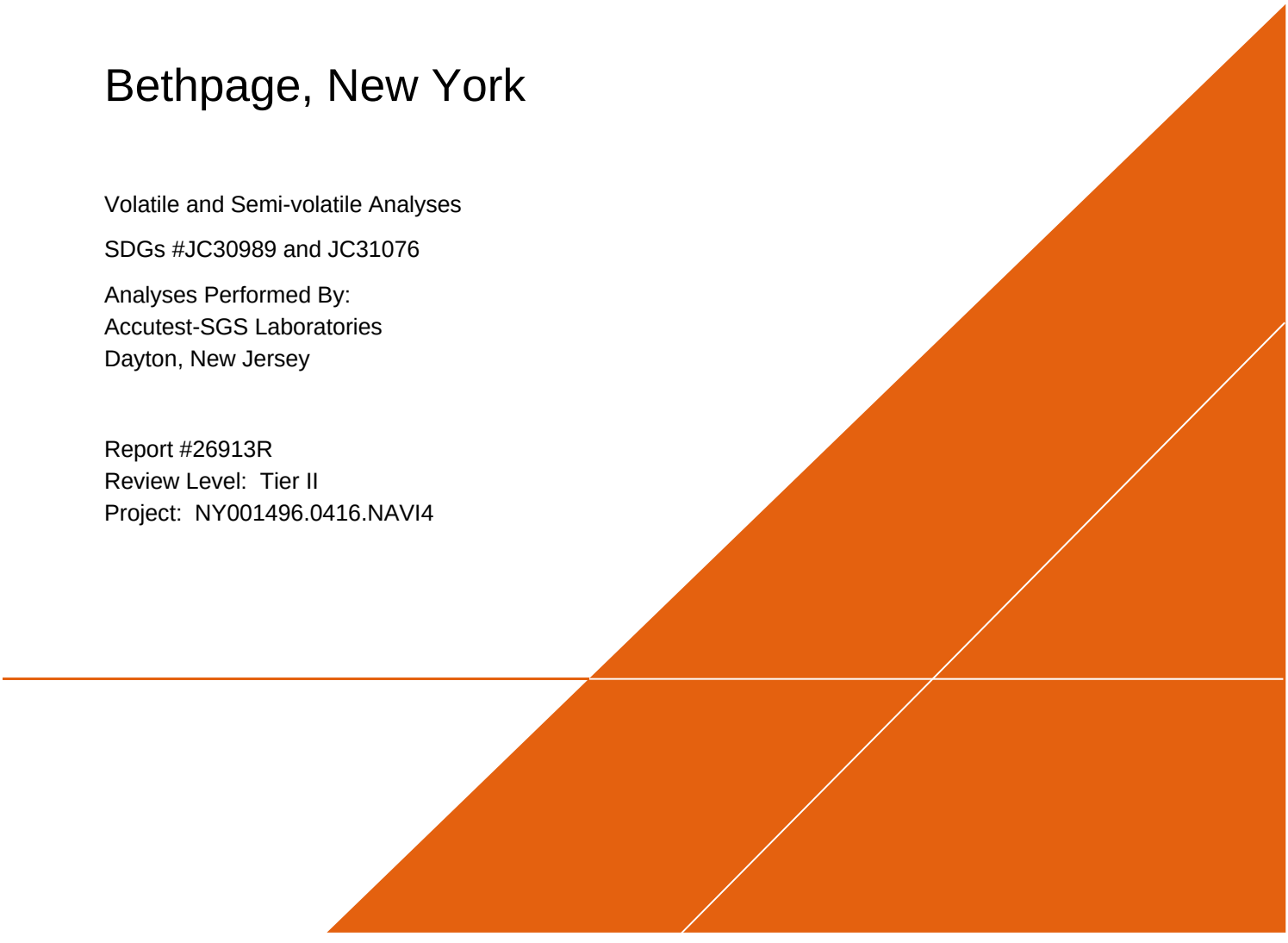
Bethpage, New York

Volatile and Semi-volatile Analyses

SDGs #JC30989 and JC31076

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #26913R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #JC30989 and JC31076 for samples collected in association with the ~~Northrop Grumman~~ Navy Wells-Bethpage Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC30989	BPOW5-5	JC30989-1	Water	11/01/2016		X	X			
	BPOW5-6	JC30989-2	Water	11/01/2016		X	X			
	TB110116MO1	JC30989-3	Water	11/01/2016		X				
JC31076	BPOW5-1	JC31076-1	Water	11/02/2016		X	X			
	BPOW5-2	JC31076-2	Water	11/02/2016		X	X			
	BPOW5-3	JC31076-3	Water	11/02/2016		X	X			
	TB11022016MO1	JC31076-4	Water	11/02/2016		X				

Notes:

1. EPA Method 522 Semi-volatile analysis for 1,4-Dioxane was performed by GEL Laboratories, LLC, located in Charleston, South Carolina (subcontracted via Accutest Laboratory). The associated SDGs are: JC30989X/409842 and JC31076X/409998.

2. Matrix spike (MS) analysis was performed on sample location BPOW5-5 for VOC analysis.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 524.2 and 522-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 524.2	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required in either SDG.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS exhibited acceptable recoveries in SDG JC30989.

A MS was not performed on a sample location associated with SDG JC31076.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in SDG JC31076.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
SDG JC30989: BPOW5-5 BPOW5-6 TB110116MO1	Carbon disulfide	>UL

The criteria used to evaluate the LCS recoveries are presented in the following table. In the case of an LCS deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either SDG.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

The laboratory duplicate exhibited acceptable RPDs in SDG JC30989.

A laboratory duplicate was not performed on a sample location associated with SDG JC31076.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: EPA 524.2	.2Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X	X		
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 522-SIM	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination in either SDG.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not performed on a sample location associated with either SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits for both SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

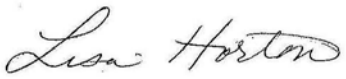
SVOCs: EPA 522-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

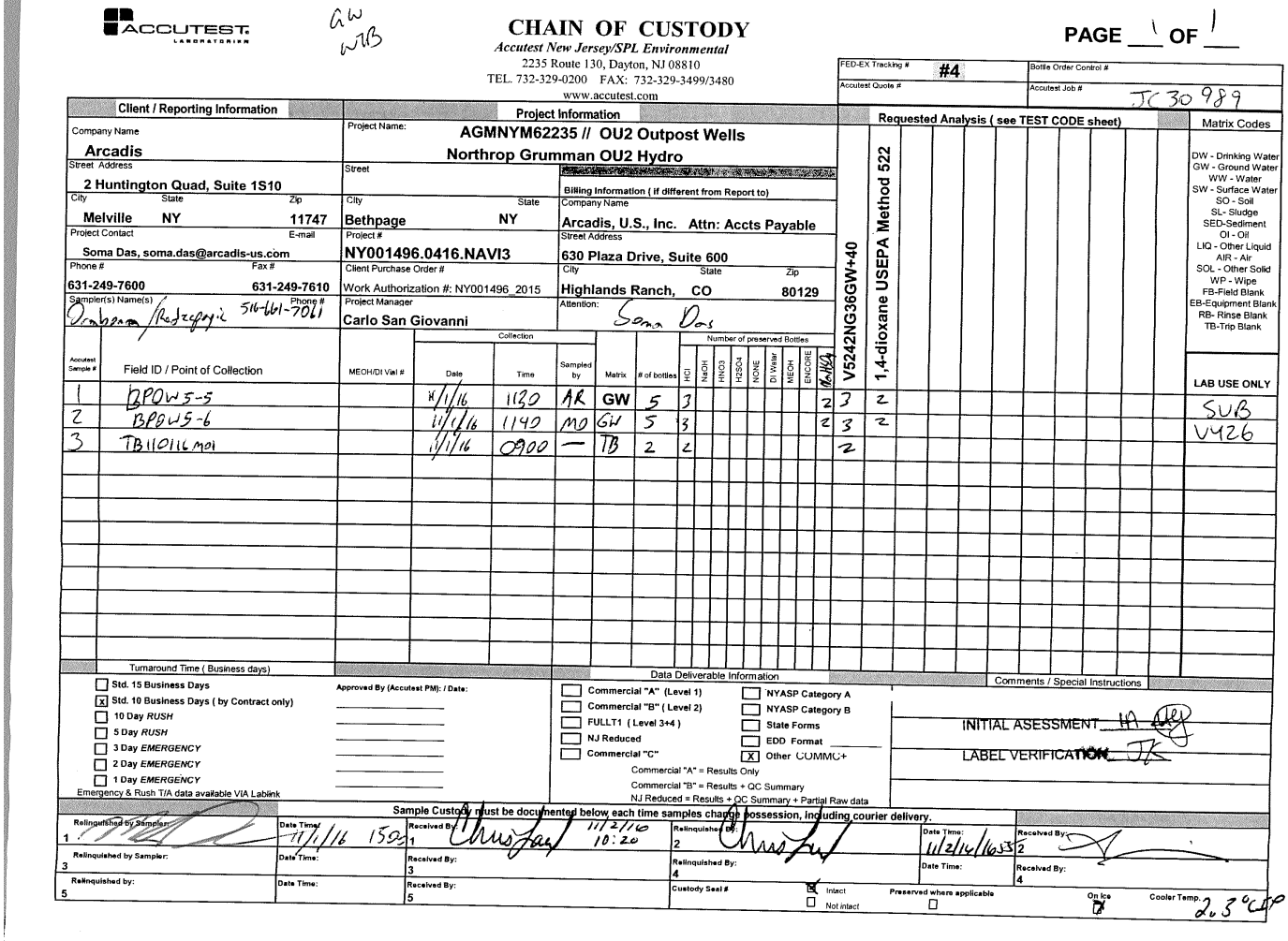
DATE: January 3, 2017

PEER REVIEW: Todd Church

DATE: January 5, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC30989

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Jimbonna / Rodzepayic Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	[illegible]	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW5-5		11/1/16	1130	AR	GW	5	3								2	3	2	SUB
2	BPOW5-6		11/1/16	1140	MO	GW	5	3								2	3	2	V426
3	TB110116M01		11/1/16	0900	—	TB	2	2									2		

Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SL- Sludge, SED-Sediment, OI - Oil, LIQ - Other Liquid, AIR - Air, SOL - Other Solid, WP - Wipe, FB-Field Blank, EB-Equipment Blank, RB- Rinse Blank, TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT HA
LABEL VERIFICATION JK

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/1/16 1500	1 [signature] 11/2/16 10:20	2 [signature]	11/2/16 1655	2 [signature]
3		3	4		4
5		5			

Custody Seal #: [x] Intact [ ] Not intact
Preserved where applicable [ ]
On Ice [x]
Cooler Temp. 2.3°C

5.1
5

JC30989: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW5-5
Lab Sample ID: JC30989-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY

Date Sampled: 11/01/16
Date Received: 11/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106309.D	1	11/09/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW5-5		
Lab Sample ID:	JC30989-1	**Date Sampled:**	11/01/16
Matrix:	AQ - Ground Water	**Date Received:**	11/02/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	94%		78-114%
460-00-4	4-Bromofluorobenzene	84%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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: BPOW5-6
Lab Sample ID: JC30989-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY

Date Sampled: 11/01/16
Date Received: 11/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106310.D	1	11/09/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW5-6		
Lab Sample ID:	JC30989-2	**Date Sampled:**	11/01/16
Matrix:	AQ - Ground Water	**Date Received:**	11/02/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	92%		78-114%
460-00-4	4-Bromofluorobenzene	82%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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: TB110116MO1
Lab Sample ID: JC30989-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY

Date Sampled: 11/01/16
Date Received: 11/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106311.D	1	11/09/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.9	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	TB110116MO1		
Lab Sample ID:	JC30989-3	**Date Sampled:**	11/01/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/02/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	83%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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

GEL

SGS ACCUTEST

CHAIN OF CUSTODY 409842

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC30989X

Client / Reporting Information	Project Information	Billing Information (if different from Report to)
Company Name: SGS Accutest	Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY	
Street Address: 2235 Route 130	Street	
City: Dayton State: NJ Zip: 08810	City State	Company Name
Project Contact: Daniel.axelrod@sgs.com E-mail	Project #	Street Address
Phone #: 732-329-0200 Fax #	Client Purchase Order #	City State Zip
Sampler(s) Name(s): AR Phone	Project Manager	Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed	LAB USE ONLY
1X	BPOW5-5		11/1/16	11:30:00 AM	AR	AQ	2								2	X	
2X	BPOW5-6		11/1/16	11:40:00 AM	MO	AQ	2								2	X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/23/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	11/3/16 17:00	1 Fed Ex	2	11/4/16 0900	2
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3 Margo Honan 11/4/16 0900	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable	On Ice	Cooler Temp.
5		5					

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC30989X GEL Work Order: 409842

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit or indicates that the analyte recovery in the MS or MSD is outside of specified acceptance criteria.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 18 NOV 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC30989X**	**Date Collected:**	**11/01/2016 11:30**	**Matrix:**	**WATER**
Lab Sample ID:	**409842001**	**Date Received:**	**11/04/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-5**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1614241**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 01:08**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/16/2016 13:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111616.B\s6k1637.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane		1.48	ug/L	0.100	0.100	0.200

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC30989X**	**Date Collected:**	**11/01/2016 11:40**	**Matrix:**	**WATER**
Lab Sample ID:	**409842002**	**Date Received:**	**11/04/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-6**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1614241**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 01:56**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/16/2016 13:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111616.B\s6k1639.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	J	0.174	ug/L	0.100	0.100	0.200

ACCUTEST LABORATORIES

GW WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC31076

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Kostzepgik, Osborn 516-661-7061 Phone #:

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	V5242NG36GW+40	1,4-dioxane USEPA Method 522
1	BPOW5-1		11/2/16	1140	AR	GW	5	3							2		3	2
2	BPOW5-2		11/2/16	1540	MO	GW	5	3							2		3	2
3	BPOW5-3		11/2/16	1225	MO	GW	5	3							2		3	2
4	TB 110216M01		11/2/16	0900	—	TB	2	2									2	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

LAB USE ONLY

SUB
U438

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT ZR 11/3
LABEL VERIFICATION JL

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler:	Date Time: 1700/11/2/16	Received By: 1	11/3/16 11:05	Relinquished By: 2	Date Time: 11/3/16 1715	Received By: 2	
3 Relinquished by Sampler:	Date Time:	Received By: 3		Relinquished By: 4	Date Time:	Received By: 4	
5 Relinquished by:	Date Time:	Received By: 5		Custody Seal #	☐ Intact ☐ Not intact	Preserved where applicable	On Ice ☐ Cooler Temp 2.3 C

JG

Report of Analysis

Client Sample ID: BPOW5-1
Lab Sample ID: JC31076-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY

Date Sampled: 11/02/16
Date Received: 11/03/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106289.D	1	11/08/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW5-1		
Lab Sample ID:	JC31076-1	**Date Sampled:**	11/02/16
Matrix:	AQ - Ground Water	**Date Received:**	11/03/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	85%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW5-2
Lab Sample ID: JC31076-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/02/16
Date Received: 11/03/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106290.D	1	11/09/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW5-2		
Lab Sample ID:	JC31076-2	**Date Sampled:**	11/02/16
Matrix:	AQ - Ground Water	**Date Received:**	11/03/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	99%		78-114%
460-00-4	4-Bromofluorobenzene	82%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW5-3
Lab Sample ID: JC31076-3
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/02/16
Date Received: 11/03/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106291.D	1	11/09/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW5-3		
Lab Sample ID:	JC31076-3	**Date Sampled:**	11/02/16
Matrix:	AQ - Ground Water	**Date Received:**	11/03/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	101%		78-114%
460-00-4	4-Bromofluorobenzene	83%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	TB110216MO1		
Lab Sample ID:	JC31076-4	**Date Sampled:**	11/02/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/03/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106292.D	1	11/09/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.4	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	TB110216MO1		
Lab Sample ID:	JC31076-4	**Date Sampled:**	11/02/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/03/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	81%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

SGS ACCUTEST

CHAIN OF CUSTODY 409998

Page 1 of 1

GEL

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job: JC31076X

Client / Reporting Information	Project Information
Company Name: SGS Accutest	Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street Address: 2235 Route 130	Street:
City / State / Zip: Dayton NJ 08810	City / State:
Project Contact / E-mail: Daniel.axelrod@sgs.com	Project #:
Phone # / Fax #: 732-329-0200	Client Purchase Order #:
Sampler(s) Name(s) / Phone: AR	Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed .	LAB USE ONLY
1X	BPOW5-1		11/2/16	11:40:00 AM	AR	AQ	2									2	X	SUB
2X	BPOW5-2		11/2/16	3:40:00 PM	MO	AQ	2									2	X	SUB
3X	BPOW5-3		11/2/16	12:25:00 PM	MO	AQ	2									2	X	SUB

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY
- ☒ other 21

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format
- ☒ Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 DWasserlos	11/4/16 17:00	1 FedEx	2		2
3	11.5.16 0845	3 P. Dent	4		4
5		5	Custody Seal # 434 ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☐ Cooler Temp.

0631 5985

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC31076X GEL Work Order: 409998

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 18 NOV 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31076X**	**Date Collected:**	**11/02/2016 11:40**	**Matrix:**	**WATER**
Lab Sample ID:	**409998001**	**Date Received:**	**11/05/2016 08:45**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-1**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1614241**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 02:44**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/16/2016 13:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111616.B\s6k1641.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31076X**	**Date Collected:**	**11/02/2016 15:40**	**Matrix:**	**WATER**
Lab Sample ID:	**409998002**	**Date Received:**	**11/05/2016 08:45**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-2**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1614241**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 03:31**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/16/2016 13:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111616.B\s6k1643.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31076X**	**Date Collected:**	**11/02/2016 12:25**	**Matrix:**	**WATER**
Lab Sample ID:	**409998003**	**Date Received:**	**11/05/2016 08:45**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-3**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1614241**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 04:19**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/16/2016 13:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111616.B\s6k1645.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane		1.41	ug/L	0.100	0.100	0.200

ARCADIS Design & Consultancy for natural and built assets

Navy Wells

~~Northrop Grumman~~ Corporation -

Operable Unit 2

Data Review

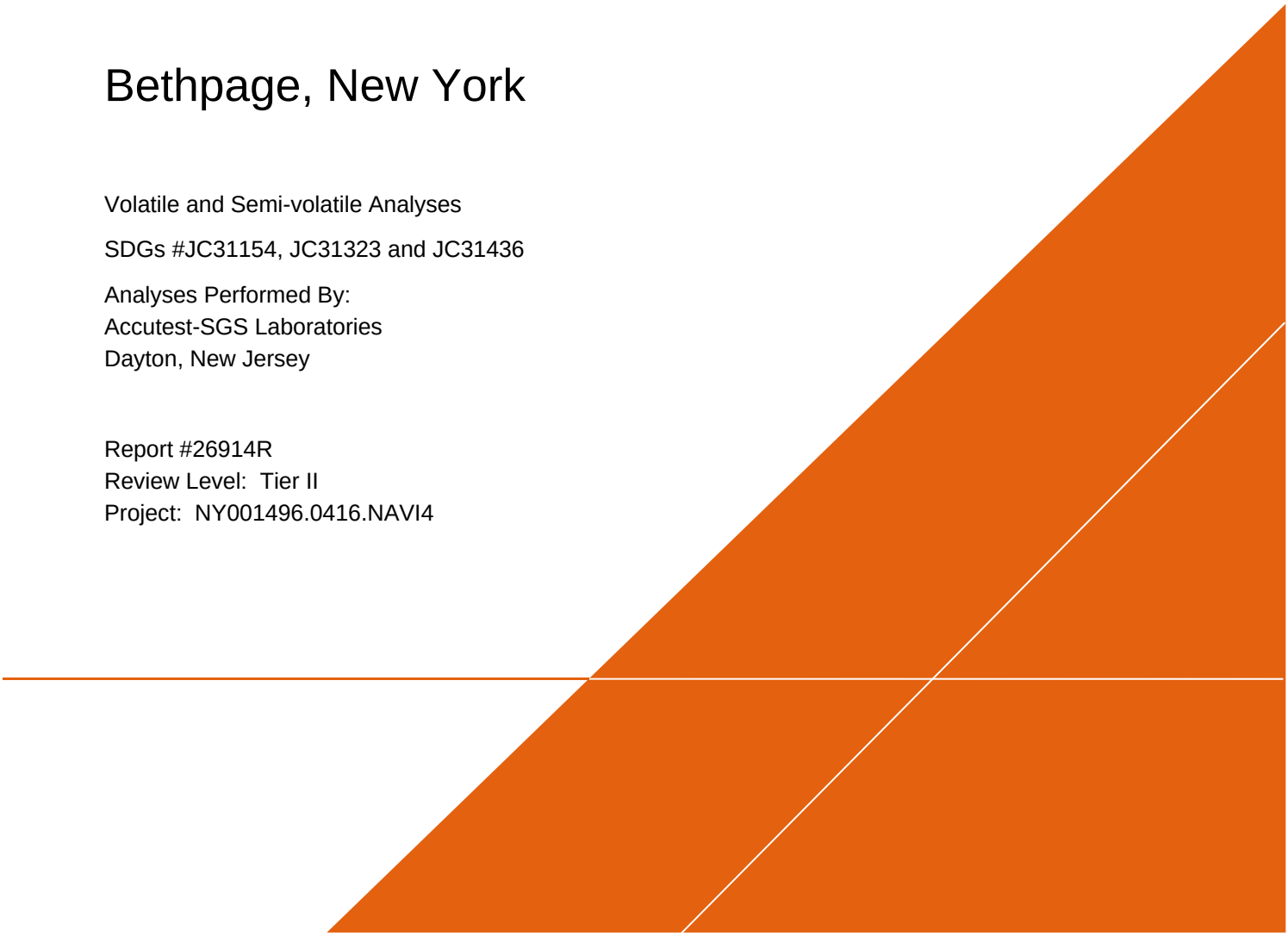
Bethpage, New York

Volatile and Semi-volatile Analyses

SDGs #JC31154, JC31323 and JC31436

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #26914R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # JC31154, JC31323 and JC31436 for samples collected in association with the Navy Wells ~~Northrop Grumman~~-Bethpage Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC31154	BPOW5-4	JC31154-1	Water	11/03/2016		X	X			
	BPOW4-2R	JC31154-2	Water	11/03/2016		X	X			
	TB110316MO1	JC31154-3	Water	11/03/2016		X				
JC31323	BPOW6-2	JC31323-1	Water	11/07/2016		X	X			
	TB110716MO1	JC31323-2	Water	11/07/2016		X				
JC31436	BPOW6-5	JC31436-1	Water	11/8/2016		X	X			
	BPOW6-6	JC31436-2	Water	11/8/2016		X	X			
	TB110816MO1	JC31436-3	Water	11/8/2016		X				

Notes:

1. EPA Method 522 Semi-volatile analysis for 1,4-Dioxane was performed by GEL Laboratories, LLC, located in Charleston, South Carolina (subcontracted via Accutest Laboratory). The associated SDGs are: JC31154X/410129, JC31323X/410309 and JC31436X/410420.

2. Matrix spike (MS) analysis was performed on sample location BPOW5-4 for SVOC analysis.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 524.2 and 522-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 524.2	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required in any of the SDGs.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with SDG JC31154, JC31323 or JC31436.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in SDG JC31154.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
SDG JC31323: BPOW6.2 TB110716MO1	Carbon disulfide	>UL
SDG JC31436: TB110816MO1		

The criteria used to evaluate the LCS recoveries are presented in the following table. In the case of an LCS deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent

sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with any of the SDGs.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A laboratory duplicate was not performed on a sample location associated with SDGs JC31154, JC31323 or JC31436.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: EPA 524.2	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X	X		
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 522-SIM	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination in either SDG.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries in SDG JC31154.

A MS/MSD was not performed on a sample location associated with SDGs JC31323 or JC31436**.**

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits for all SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either of the SDGs.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

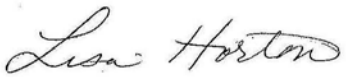
SVOCs: EPA 522-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 3, 2017

PEER REVIEW: Todd Church

DATE: January 5, 2017

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC31154

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Alaina Redzepagic Phone #: 212-365-4651

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Na2S2O3	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW 5-4		11/3/2016	1105	MO	GW	5	3								2	3	2	SUB
2	BPOW 4-2R		11/3/2016	1635	AR	GW	5	3								2	3	2	V450
3	TB 110316 MO 1		11/3/2016	900	—	TB	2	2									2		

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labilink

Approved By (Accutest PM): / Date: ZAS
INITIAL ASESSMENT
LABEL VERIFICATION JK

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULL1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 1700 11/03/16	Received By: 1 Chris Faul	11/4/16 10:30	Relinquished By: 2 Chris Faul	Date Time: 11/4/16 17:00	Received By: 2	
Relinquished by Sampler: 3	Date Time:	Received By: 3		Relinquished By: 4	Date Time:	Received By: 4	
Relinquished by: 5	Date Time:	Received By: 5		Custody Seal #	[X] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [X] Cooler Temp. 1.0°C CFP

JC31154: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID:	BPOW5-4		
Lab Sample ID:	JC31154-1	**Date Sampled:**	11/03/16
Matrix:	AQ - Ground Water	**Date Received:**	11/04/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106286.D	1	11/08/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW5-4		
Lab Sample ID:	JC31154-1	**Date Sampled:**	11/03/16
Matrix:	AQ - Ground Water	**Date Received:**	11/04/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	84%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW4-2R
Lab Sample ID: JC31154-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman~~ Navy Wells, OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106287.D	1	11/08/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	0.094	0.50	0.073	ug/l	J
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	0.27	0.50	0.18	ug/l	J
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	7.0	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW4-2R		
Lab Sample ID:	JC31154-2	**Date Sampled:**	11/03/16
Matrix:	AQ - Ground Water	**Date Received:**	11/04/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	0.91	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%		78-114%
460-00-4	4-Bromofluorobenzene	85%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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:	TB110316MO1		
Lab Sample ID:	JC31154-3	**Date Sampled:**	11/03/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/04/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106288.D	1	11/08/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.3	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB110316MO1
Lab Sample ID: JC31154-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	84%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

SGS ACCUTEST

4/0129%

CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC31154X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MO Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SB522SIM14DIOX .14 Dioxane via 522 method low pql needed

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SB522SIM14DIOX .14 Dioxane via 522 method low pql needed	LAB USE ONLY
1X	BPOW5-4		11/3/16	11:05:00 AM	MO	AQ	0								X	X	
2X	BPOW4-2R		11/3/16	4:35:00 PM	AR	AQ	0								X	X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other 21

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler:	Date/Time: 11/3/16 17:00	Received By: 1 FedEx	Relinquished By: 2	Date Time: ~~11-9-16 4:00~~	Received By: 2 11/9/16 9:00
3 Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5 Relinquished by:	Date Time:	Received By: 5	Custody Seal # [ ] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [ ] Cooler Temp.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: 410129 GEL Work Order: 410129

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 21 NOV 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**410129**	**Date Collected:**	**11/03/2016 11:05**	**Matrix:**	**WATER**
Lab Sample ID:	**410129001**	**Date Received:**	**11/09/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-4**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 20:58**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1709.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane		1.27	ug/L	0.100	0.100	0.200

SGS ACCUTEST
JC31154X

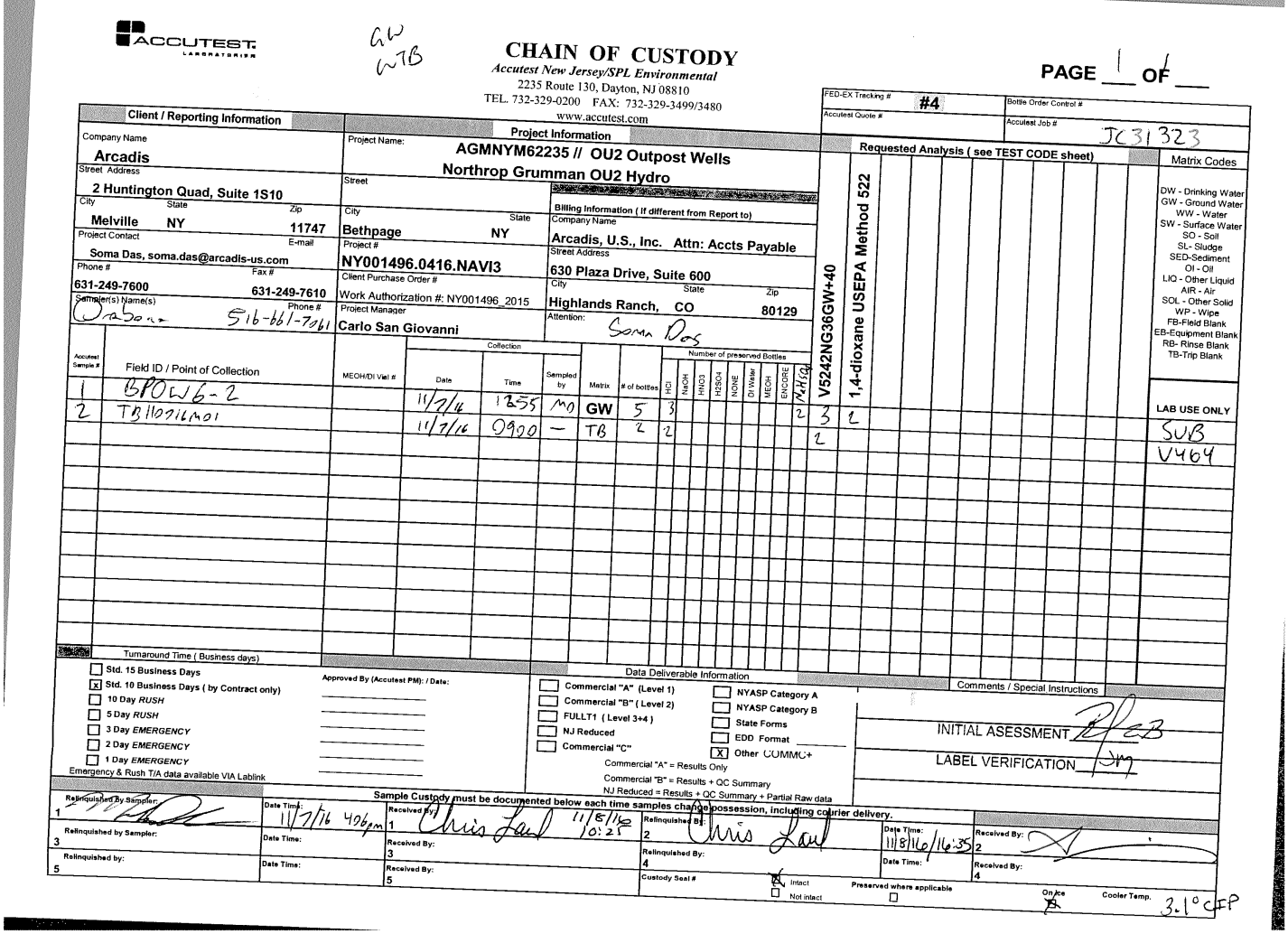
2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**410129**	**Date Collected:**	**11/03/2016 16:35**	**Matrix:**	**WATER**
Lab Sample ID:	**410129002**	**Date Received:**	**11/09/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW4-2R**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 22:39**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1713.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane		1.14	ug/L	0.100	0.100	0.200

SGS ACCUTEST
JC31154X



ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF ___

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC31323

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Osborne Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (If different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	MeHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW6-2		11/7/16	1255	MO	GW	5	3								2	3	2	SUB
2	TB110716M01		11/7/16	0900	—	TB	2	2									2		V464

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT [signature]
LABEL VERIFICATION [signature]

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished By Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/7/16 406pm	1 Chris Laul 11/8/16 10:25	2 Chris Laul	11/8/16 16:35	2 [signature]
3		3	4		4
5		5			

Custody Seal # [x] Intact [ ] Not intact
Preserved where applicable [ ]
On Ice [x]
Cooler Temp. 3.1° CFP

5.1
5

JC31323: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW6-2
Lab Sample ID: JC31323-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/07/16
Date Received: 11/08/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106312.D	1	11/09/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-2
Lab Sample ID: JC31323-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/07/16
Date Received: 11/08/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	95%		78-114%
460-00-4	4-Bromofluorobenzene	81%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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: TB110716MO1
Lab Sample ID: JC31323-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/07/16
Date Received: 11/08/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106313.D	1	11/09/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	2.0	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB110716MO1
Lab Sample ID: JC31323-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/07/16
Date Received: 11/08/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	95%		78-114%
460-00-4	4-Bromofluorobenzene	81%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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

SGS ACCUTEST

CHAIN OF CUSTODY

410309

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC31323X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MD Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed
1X	BPOW6-2		11/7/16	12:55:00 PM	MD	AQ	2									2	X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

LAB USE ONLY
SUB

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/22/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler: B Wasserlauer	Date Time: 11/9/16 17:00	Received By: Fed Ex	Relinquished By: 2	Date Time:	Received By: 2 Zaur 11/10/16 9:10
3 Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5 Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: 410309 GEL Work Order: 410309

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 28 NOV 2016 **Title: Data Validator**

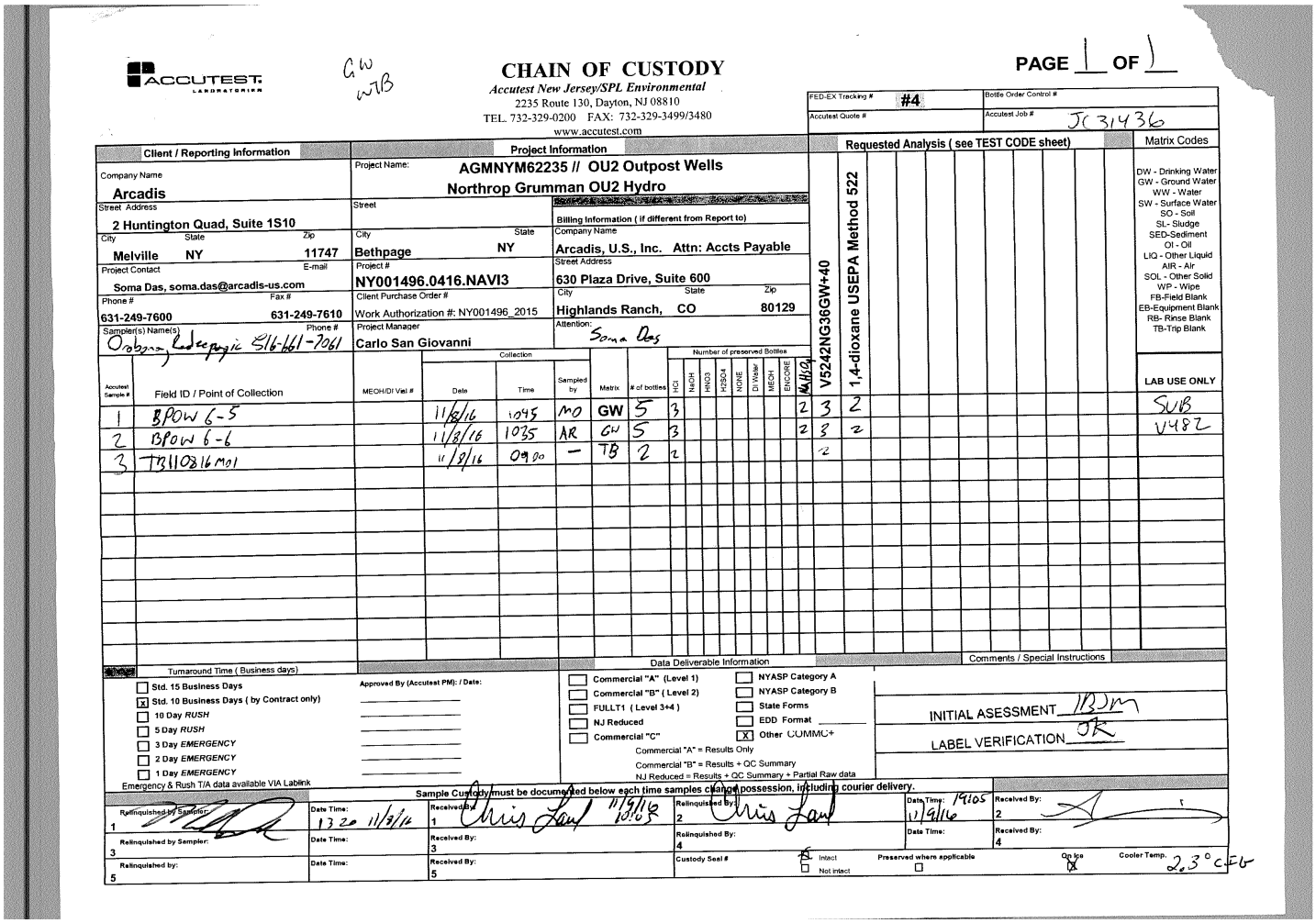
2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**410309**	**Date Collected:**	**11/07/2016 12:55**	**Matrix:**	**WATER**
Lab Sample ID:	**410309001**	**Date Received:**	**11/10/2016 09:10**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-2**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 23:28**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1715.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

SGS ACCUTEST
JC31323X



ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC31436

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Orobona, Redeepagic Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW 6-5		11/8/16	1045	MO	GW	5	3								2	3	2	SUB
2	BPOW 6-6		11/8/16	1035	AR	GW	5	3								2	3	2	V482
3	TB110816M01		11/8/16	0900	—	TB	2	2									2		

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT IBJM
LABEL VERIFICATION OK

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	1320 11/8/16	1 Chris Laul 11/9/16 10:05	2 Chris Laul	11/9/16 19:05	2 [signature]
3		3	4		4
5		5			

Custody Seal # [x] Intact [ ] Not intact
Preserved where applicable [ ]
On Ice [x]
Cooler Temp. 2.3° C-IR

5.1
5

JC31436: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW6-5
Lab Sample ID: JC31436-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106584.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-5
Lab Sample ID: JC31436-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%		78-114%
460-00-4	4-Bromofluorobenzene	98%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW6-6
Lab Sample ID: JC31436-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106592.D	1	11/21/16	BK	n/a	n/a	V1B5058
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW6-6		
Lab Sample ID:	JC31436-2	**Date Sampled:**	11/08/16
Matrix:	AQ - Ground Water	**Date Received:**	11/09/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	95%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB110816MO1
Lab Sample ID: JC31436-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106341.D	1	11/10/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	0.94	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	TB110816MO1		
Lab Sample ID:	JC31436-3	**Date Sampled:**	11/08/16
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/09/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project: Navy Wells	~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	78%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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

4/10420

SGS ACCUTEST

CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #

Bottle Order Control #

SGS Accutest Quote #

SGS Accutest Job: JC31436X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MO Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed
1X	BPOW6-5		11/8/16	10:45:00 AM	MO	AQ	2									2	X
2X	BPOW6-6		11/8/16	10:35:00 AM	AR	AQ	2									2	X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

LAB USE ONLY

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/23/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler: B Vasselaios	Date/Time: 11/10/16	Received By: 1 FedEx	Relinquished By: 2	Date Time:	Received By: 2 Stay Boone 11/11/16 8:45
3 Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time: 11-11-16 8:45	Received By: 4
5 Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC31436X GEL Work Order: 410420

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
Q LCS recovery not within control limits
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 01 DEC 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31436X**	**Date Collected:**	**11/08/2016 10:45**	**Matrix:**	**WATER**
Lab Sample ID:	**410420001**	**Date Received:**	**11/11/2016 08:45**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-5**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1618987**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/30/2016 22:17**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/30/2016 12:45**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s113016.B\s6k3031.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31436X**	**Date Collected:**	**11/08/2016 10:35**	**Matrix:**	**WATER**
Lab Sample ID:	**410420002**	**Date Received:**	**11/11/2016 08:45**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-6**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/18/2016 01:06**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1719.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

ARCADIS Design & Consultancy for natural and built assets

Navy Wells

~~Northrop Grumman~~ Corporation -

Operable Unit 2

Data Review

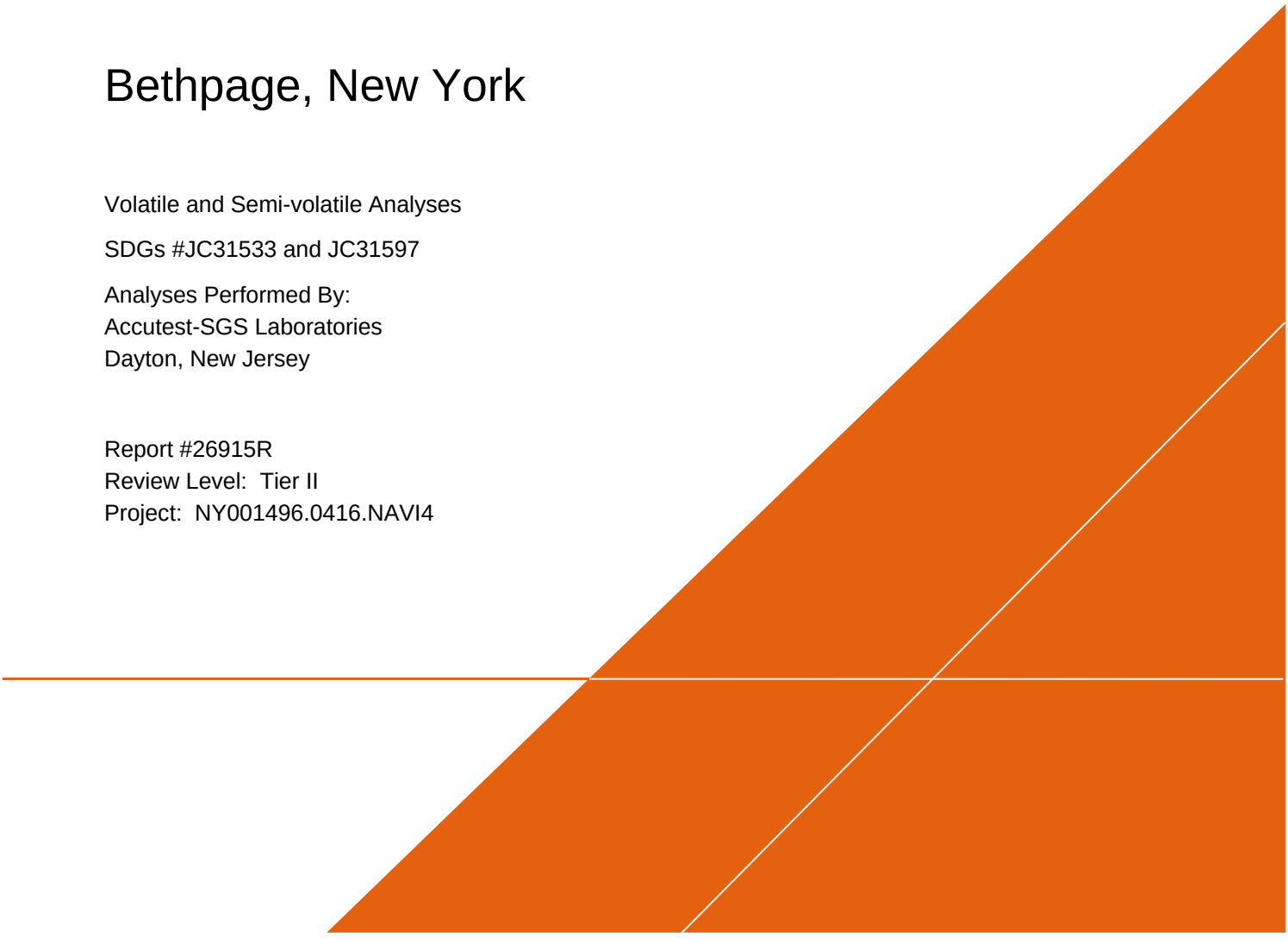
Bethpage, New York

Volatile and Semi-volatile Analyses

SDGs #JC31533 and JC31597

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #26915R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #JC31533 and JC31597 for samples collected in association with the ~~Northrop Grumman~~ Navy Wells Bethpage Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC31533	BPOW5-7	JC31533-1	Water	11/09/2016		X	X			
	TB110916MO1	JC31533-2	Water	11/09/2016		X				
JC31597	BPOW6-3	JC31597-1	Water	11/10/2016		X	X			
	BPOW6-4	JC31597-2	Water	11/10/2016		X	X			
	TB111016MO1	JC31597-3	Water	11/10/2016		X				

Note:

1. EPA Method 522 Semi-volatile analysis for 1,4-Dioxane was performed by GEL Laboratories, LLC, located in Charleston, South Carolina (subcontracted via Accutest Laboratory). The associated SDGs are: JC31533X/410517 and JC31597X/410629.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 524.2 and 522-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 524.2	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required in either SDGs.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with SDGs JC31533 or JC31597.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in both SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either of the SDGs.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A laboratory duplicate was not performed on a sample location associated with SDGs JC31533 or JC31597.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: EPA 524.2	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X	X		
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 522-SIM	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination in either SDG.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not performed on a sample location associated with SDGs JC31533 or JC31597**.**

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits for both SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either SDGs.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

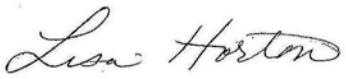
SVOCs: EPA 522-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 3, 2017

PEER REVIEW: Todd Church

DATE: January 5, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC31533

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Mike Osborn Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	B8OW5-7		11/09/16	1610	MO	GW	5	3								2	3	2	SVB
2	TB110916M01		11/09/16	0900	—	TB	2	2									2		V494

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

INITIAL ASESSMENT 2B
LABEL VERIFICATION JK

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU 2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/9/16 1800	1 [signature] 11/10/16 12:00	2 [signature]	11/10/16 18:00	2 [signature]
3		3	4		4
5		5			

Custody Seal # ☐ Intact ☐ Not intact Preserved where applicable ☐ On Ice ☐ Cooler Temp. 4.3°C

5.1
5

JC31533: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW5-7
Lab Sample ID: JC31533-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/09/16
Date Received: 11/10/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106582.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	0.089	0.50	0.055	ug/l	J
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW5-7
Lab Sample ID: JC31533-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/09/16
Date Received: 11/10/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%		78-114%
460-00-4	4-Bromofluorobenzene	97%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB110916MO1
Lab Sample ID: JC31533-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/09/16
Date Received: 11/10/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106427.D	1	11/14/16	BK	n/a	n/a	V1B5051
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.4	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	0.10	0.50	0.076	ug/l	J
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB110916MO1
Lab Sample ID: JC31533-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/09/16
Date Received: 11/10/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	77%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

4105179

CHAIN OF CUSTODY

SGS ACCUTEST

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC31533X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MO Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SB522SIM14DIOX .14 Dioxane via 522 method low pql needed ,

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4		LAB USE ONLY
1X	BPOW5-7		11/9/16	4:10:00 PM	MO	AQ	2									2	X	SUB

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 12/1/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 11/10/16 17:00	Received By: 1 fedEx	Relinquished By: 2	Date Time: 11.12.16 0900	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

2

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC31533X GEL Work Order: 410517

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 21 NOV 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31533X**	**Date Collected:**	**11/09/2016 16:10**	**Matrix:**	**WATER**
Lab Sample ID:	**410517001**	**Date Received:**	**11/12/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-7**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/18/2016 02:42**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1723.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC31597

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Robert Szczepanski, Odong Phone #: 516 661 7040

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells
Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (If different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Na2S2O3	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW6-3		11/10/16	1150	AR	GW	5	Y							X	3	3	2	V503
2	BPOW 6-4		11/10/16	1210	MO	GW	5	X							X	3	3	2	
3	TB 111016 mo1		11/10/16	0900	—	TB	2	X								2	2		

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT/A Dom
LABEL VERIFICATION JK

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Albina Kochepapie	11/11/16 15:30	Chris Laul 11/11/16 9:45	Chris Laul	11/11/16 16:20	
2	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3				4		
4	Relinquished by:	Date Time:	Received By:	Custody Seal # 706 Intact / Not Intact	Preserved where applicable	On Ice ☒ Cooler Temp. 2.0 °C IR
5						

5.1
5

JC31597: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW6-3
Lab Sample ID: JC31597-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106573.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-3
Lab Sample ID: JC31597-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	96%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW6-4
Lab Sample ID: JC31597-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106574.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW6-4		
Lab Sample ID:	JC31597-2	**Date Sampled:**	11/10/16
Matrix:	AQ - Ground Water	**Date Received:**	11/11/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project: Navy Wells	~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	94%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB111016MO1
Lab Sample ID: JC31597-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106575.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.3	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB111016MO1
Lab Sample ID: JC31597-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	97%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

GW WTB

410629

CHAIN OF CUSTODY

PAGE 1 OF 1

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking # #4 | Bottle Order Control #

Accutest Quote # | Accutest Job # JC31597

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Radzapopic, Oldham Phone #: 516 661 7400

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells
Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #:
Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (If different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Na2S2O3	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW6-3		11/10/16	1150	AR	GW	5	Y								X	3	2	V503
2	BPOW 6-4		11/10/16	1210	MA	GW	5	X								X	3	2	
3	TB111016 mal		11/10/16	0900	—	TB	2	X									2		

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

INITIAL ASSESSMENT/A Dom

LABEL VERIFICATION

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Albina Radzapopic	11/10/16 15:30	Chris Land	Chris Land	11/11/16 16:20	
2			11/11/16 9:45			
3	Sandy Mount	11-14-16 1800	FEDEX		11/15/16 9:20	
4						
5				Custody Seal # 706 Intact / Not intact	Preserved where applicable	On Ice ✓ Cooler Temp. 2.0°C IP

SEAL # 489

2

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC31597X GEL Work Order: 410629

The Qualifiers in this report are defined as follows:

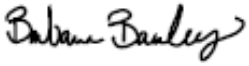
* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
B Target analyte was detected in the sample as well as the associated blank.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit or indicates that the analyte recovery in the MS or MSD is outside of specified acceptance criteria.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Barbara Bailey**

Date: 06 DEC 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31597X**	**Date Collected:**	**11/10/2016 11:50**	**Matrix:**	**WATER**
Lab Sample ID:	**410629001**	**Date Received:**	**11/15/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-3**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1618987**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/30/2016 23:11**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/30/2016 12:45**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s113016.B\s6k3033.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31597X**	**Date Collected:**	**11/10/2016 12:10**	**Matrix:**	**WATER**
Lab Sample ID:	**410629002**	**Date Received:**	**11/15/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-4**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1618987**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/30/2016 23:38**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/30/2016 12:45**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s113016.B\s6k3034.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	J	0.103	ug/L	0.100	0.100	0.200

ARCADIS Design & Consultancy for natural and built assets

Navy Wells

~~Northrop Grumman Corporation -~~

Operable Unit 2

Data Review

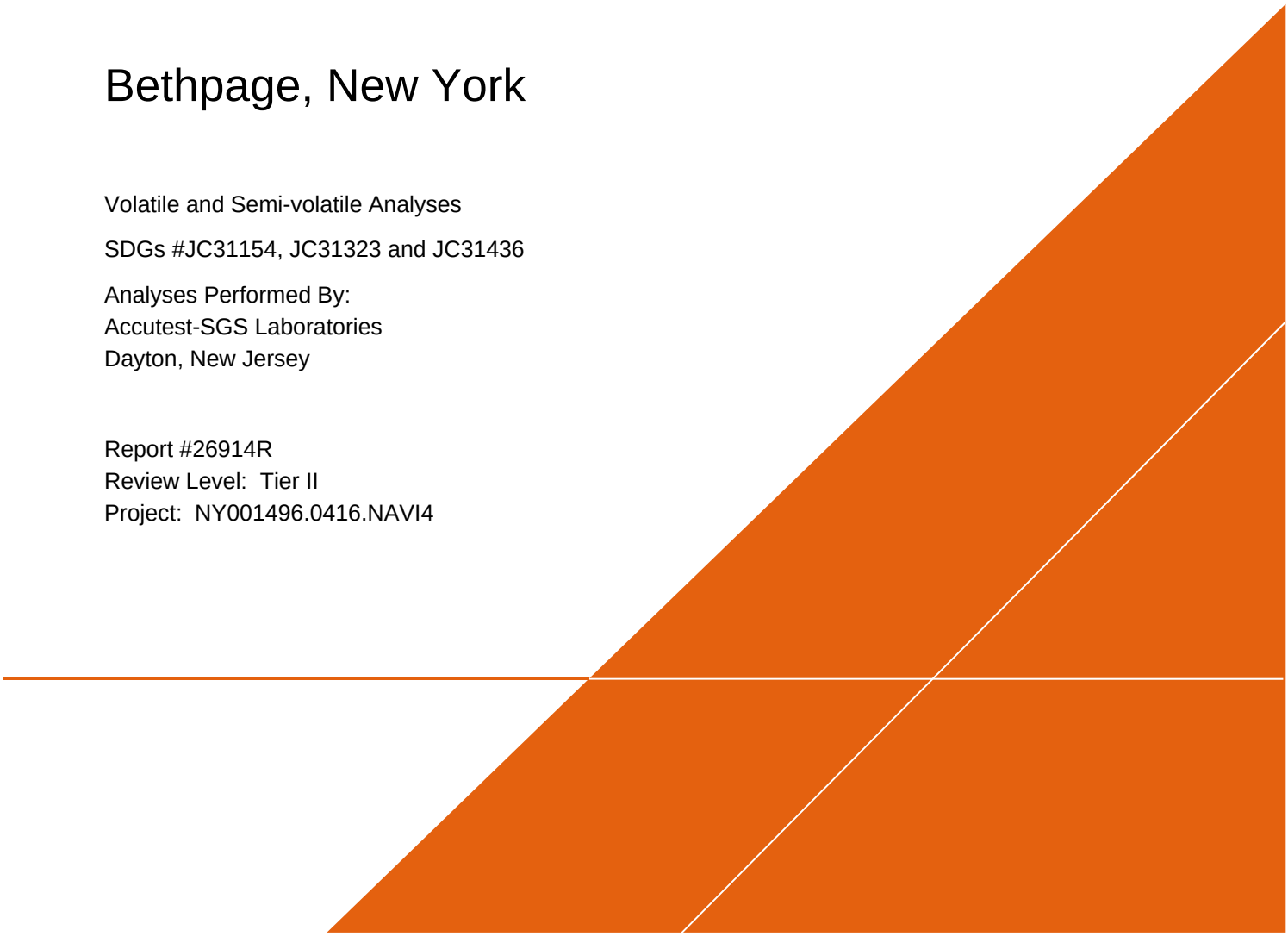
Bethpage, New York

Volatile and Semi-volatile Analyses

SDGs #JC31154, JC31323 and JC31436

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #26914R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # JC31154, JC31323 and JC31436 for samples collected in association with the Navy Wells ~~Northrop Grumman~~ Bethpage Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC31154	BPOW5-4	JC31154-1	Water	11/03/2016		X	X			
	BPOW4-2R	JC31154-2	Water	11/03/2016		X	X			
	TB110316MO1	JC31154-3	Water	11/03/2016		X				
JC31323	BPOW6-2	JC31323-1	Water	11/07/2016		X	X			
	TB110716MO1	JC31323-2	Water	11/07/2016		X				
JC31436	BPOW6-5	JC31436-1	Water	11/8/2016		X	X			
	BPOW6-6	JC31436-2	Water	11/8/2016		X	X			
	TB110816MO1	JC31436-3	Water	11/8/2016		X				

Notes:

1. EPA Method 522 Semi-volatile analysis for 1,4-Dioxane was performed by GEL Laboratories, LLC, located in Charleston, South Carolina (subcontracted via Accutest Laboratory). The associated SDGs are: JC31154X/410129, JC31323X/410309 and JC31436X/410420.

2. Matrix spike (MS) analysis was performed on sample location BPOW5-4 for SVOC analysis.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 524.2 and 522-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 524.2	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required in any of the SDGs.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with SDG JC31154, JC31323 or JC31436.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in SDG JC31154.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
SDG JC31323: BPOW6.2 TB110716MO1	Carbon disulfide	>UL
SDG JC31436: TB110816MO1		

The criteria used to evaluate the LCS recoveries are presented in the following table. In the case of an LCS deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent

sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with any of the SDGs.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A laboratory duplicate was not performed on a sample location associated with SDGs JC31154, JC31323 or JC31436.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: EPA 524.2	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X	X		
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 522-SIM	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination in either SDG.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries in SDG JC31154.

A MS/MSD was not performed on a sample location associated with SDGs JC31323 or JC31436**.**

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits for all SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either of the SDGs.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

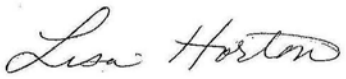
SVOCs: EPA 522-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 3, 2017

PEER REVIEW: Todd Church

DATE: January 5, 2017

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC31154

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Alaina Redzepagic Phone #: 212-365-4651

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Na2S2O3	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW 5-4		11/3/2016	1105	MO	GW	5	3								2	3	2	SUB
2	BPOW 4-2R		11/3/2016	1635	AR	GW	5	3								2	3	2	V450
3	TB 110316 MO 1		11/3/2016	900	—	TB	2	2									2		

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labilink

Approved By (Accutest PM): / Date: ZAS
INITIAL ASESSMENT
LABEL VERIFICATION JK

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULL1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 1700 11/03/16	Received By: 1 Chris Faul	11/4/16 10:30	Relinquished By: 2 Chris Faul	Date Time: 11/4/16 17:00	Received By: 2	
Relinquished by Sampler: 3	Date Time:	Received By: 3		Relinquished By: 4	Date Time:	Received By: 4	
Relinquished by: 5	Date Time:	Received By: 5		Custody Seal #	[X] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [X] Cooler Temp. 1.0°C CFP

JC31154: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW5-4
Lab Sample ID: JC31154-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106286.D	1	11/08/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW5-4
Lab Sample ID: JC31154-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	84%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW4-2R
Lab Sample ID: JC31154-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106287.D	1	11/08/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	0.094	0.50	0.073	ug/l	J
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	0.27	0.50	0.18	ug/l	J
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	7.0	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW4-2R
Lab Sample ID: JC31154-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	0.91	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%		78-114%
460-00-4	4-Bromofluorobenzene	85%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB110316MO1
Lab Sample ID: JC31154-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106288.D	1	11/08/16	BK	n/a	n/a	V1B5048
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.3	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB110316MO1
Lab Sample ID: JC31154-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/03/16
Date Received: 11/04/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	84%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

SGS ACCUTEST

4/0129%

CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC31154X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MO Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SB522SIM14DIOX .14 Dioxane via 522 method low pql needed

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	SB522SIM14DIOX .14 Dioxane via 522 method low pql needed	LAB USE ONLY
1X	BPOW5-4		11/3/16	11:05:00 AM	MO	AQ	0								X	X	
2X	BPOW4-2R		11/3/16	4:35:00 PM	AR	AQ	0								X	X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other 21

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler:	Date/Time: 11/3/16 17:00	Received By: 1 FedEx	Relinquished By: 2	Date Time: ~~11-9-16 4:00~~	Received By: 2 11/9/16 9:00
3 Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5 Relinquished by:	Date Time:	Received By: 5	Custody Seal # [ ] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [ ] Cooler Temp.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: 410129 GEL Work Order: 410129

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 21 NOV 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**410129**	**Date Collected:**	**11/03/2016 11:05**	**Matrix:**	**WATER**
Lab Sample ID:	**410129001**	**Date Received:**	**11/09/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-4**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 20:58**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1709.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane		1.27	ug/L	0.100	0.100	0.200

SGS ACCUTEST
JC31154X

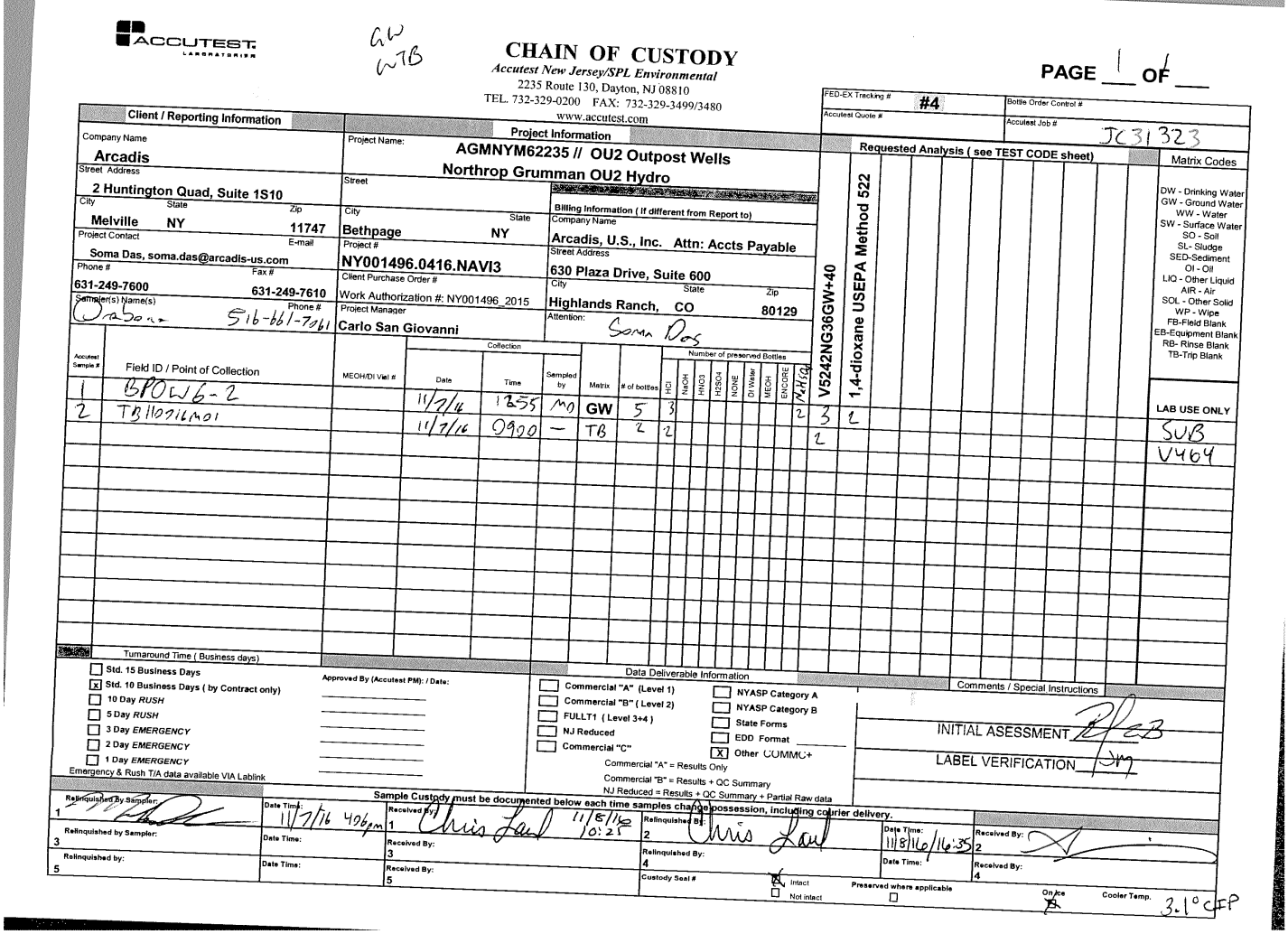
2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**410129**	**Date Collected:**	**11/03/2016 16:35**	**Matrix:**	**WATER**
Lab Sample ID:	**410129002**	**Date Received:**	**11/09/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW4-2R**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 22:39**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1713.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane		1.14	ug/L	0.100	0.100	0.200

SGS ACCUTEST
JC31154X



ACCUTEST LABORATORIES

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CHAIN OF CUSTODY

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2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF ___

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC31323

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Osborne Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (If different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	MeHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW6-2		11/7/16	1255	MO	GW	5	3								2	3	2	SUB
2	TB110716M01		11/7/16	0900	—	TB	2	2									2		V464

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT [signature]
LABEL VERIFICATION [signature]

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished By Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/7/16 406pm	1 Chris Laul 11/8/16 10:25	2 Chris Laul	11/8/16 16:35	2 [signature]
3		3	4		4
5		5			

Custody Seal # [x] Intact [ ] Not intact
Preserved where applicable [ ]
On Ice [x]
Cooler Temp. 3.1° CFP

5.1
5

JC31323: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW6-2
Lab Sample ID: JC31323-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/07/16
Date Received: 11/08/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106312.D	1	11/09/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW6-2		
Lab Sample ID:	JC31323-1	**Date Sampled:**	11/07/16
Matrix:	AQ - Ground Water	**Date Received:**	11/08/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	95%		78-114%
460-00-4	4-Bromofluorobenzene	81%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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: TB110716MO1
Lab Sample ID: JC31323-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/07/16
Date Received: 11/08/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106313.D	1	11/09/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	2.0	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB110716MO1
Lab Sample ID: JC31323-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/07/16
Date Received: 11/08/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	95%		78-114%
460-00-4	4-Bromofluorobenzene	81%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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

SGS ACCUTEST

CHAIN OF CUSTODY

410309

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC31323X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MD Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed
1X	BPOW6-2		11/7/16	12:55:00 PM	MD	AQ	2									2	X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

LAB USE ONLY
SUB

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/22/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler: B Wasserlauer	Date Time: 11/9/16 17:00	Received By: Fed Ex	Relinquished By: 2	Date Time:	Received By: 2 Zaur 11/10/16 9:10
3 Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5 Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: 410309 GEL Work Order: 410309

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 28 NOV 2016 **Title: Data Validator**

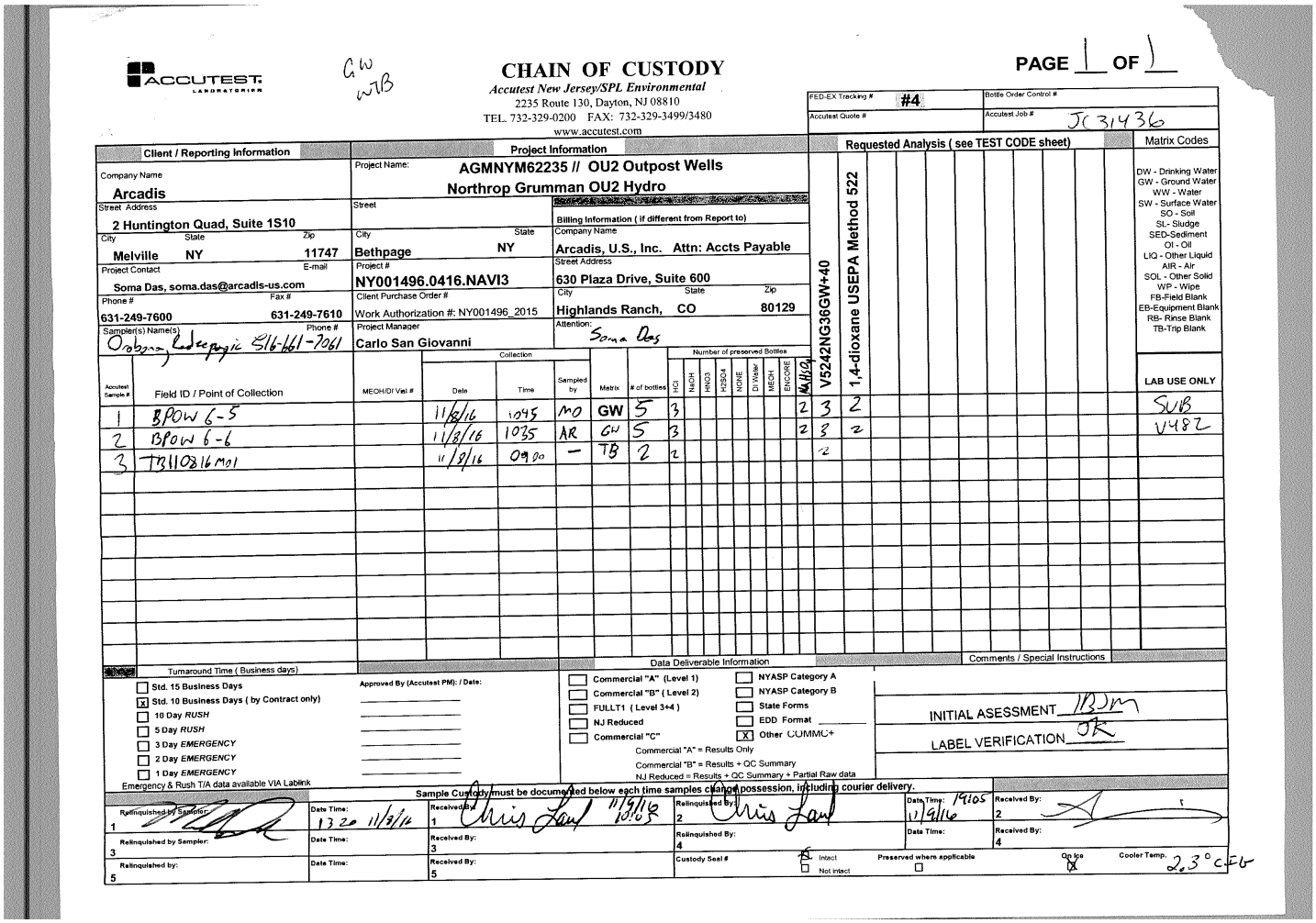
2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**410309**	**Date Collected:**	**11/07/2016 12:55**	**Matrix:**	**WATER**
Lab Sample ID:	**410309001**	**Date Received:**	**11/10/2016 09:10**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-2**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/17/2016 23:28**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1715.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

SGS ACCUTEST
JC31323X



ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC31436

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Orobona, Redeepagic Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW 6-5		11/8/16	1045	MO	GW	5	3								2	3	2	SUB
2	BPOW 6-6		11/8/16	1035	AR	GW	5	3								2	3	2	V482
3	TB110816M01		11/8/16	0900	—	TB	2	2									2		

Number of preserved Bottles

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT IBJM
LABEL VERIFICATION OK

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	1320 11/8/16	1 Chris Lau 11/9/16 10:05	2 Chris Lau	11/9/16 19:05	2 [signature]
3		3	4		4
5		5			

Custody Seal # [x] Intact [ ] Not intact
Preserved where applicable [ ]
On Ice [x]
Cooler Temp. 2.3° C-IR

5.1
5

JC31436: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW6-5
Lab Sample ID: JC31436-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106584.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-5
Lab Sample ID: JC31436-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%		78-114%
460-00-4	4-Bromofluorobenzene	98%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW6-6
Lab Sample ID: JC31436-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106592.D	1	11/21/16	BK	n/a	n/a	V1B5058
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-6
Lab Sample ID: JC31436-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	95%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB110816MO1
Lab Sample ID: JC31436-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106341.D	1	11/10/16	BK	n/a	n/a	V1B5049
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	0.94	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide [b]	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB110816MO1
Lab Sample ID: JC31436-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/08/16
Date Received: 11/09/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	78%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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

4/10420

SGS ACCUTEST

CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #

Bottle Order Control #

SGS Accutest Quote #

SGS Accutest Job: JC31436X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MO Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed
1X	BPOW6-5		11/8/16	10:45:00 AM	MO	AQ	2									2	X
2X	BPOW6-6		11/8/16	10:35:00 AM	AR	AQ	2									2	X

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

LAB USE ONLY

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/23/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler: B Vasselaios	Date/Time: 11/10/16	Received By: 1 FedEx	Relinquished By: 2	Date Time:	Received By: 2 Stay Boone 11/11/16 8:45
3 Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time: 11-11-16 8:45	Received By: 4
5 Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC31436X GEL Work Order: 410420

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
Q LCS recovery not within control limits
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 01 DEC 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31436X**	**Date Collected:**	**11/08/2016 10:45**	**Matrix:**	**WATER**
Lab Sample ID:	**410420001**	**Date Received:**	**11/11/2016 08:45**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-5**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1618987**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/30/2016 22:17**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/30/2016 12:45**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s113016.B\s6k3031.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31436X**	**Date Collected:**	**11/08/2016 10:35**	**Matrix:**	**WATER**
Lab Sample ID:	**410420002**	**Date Received:**	**11/11/2016 08:45**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-6**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/18/2016 01:06**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1719.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

ARCADIS Design & Consultancy for natural and built assets

Navy Wells

~~Northrop Grumman Corporation -~~

Operable Unit 2

Data Review

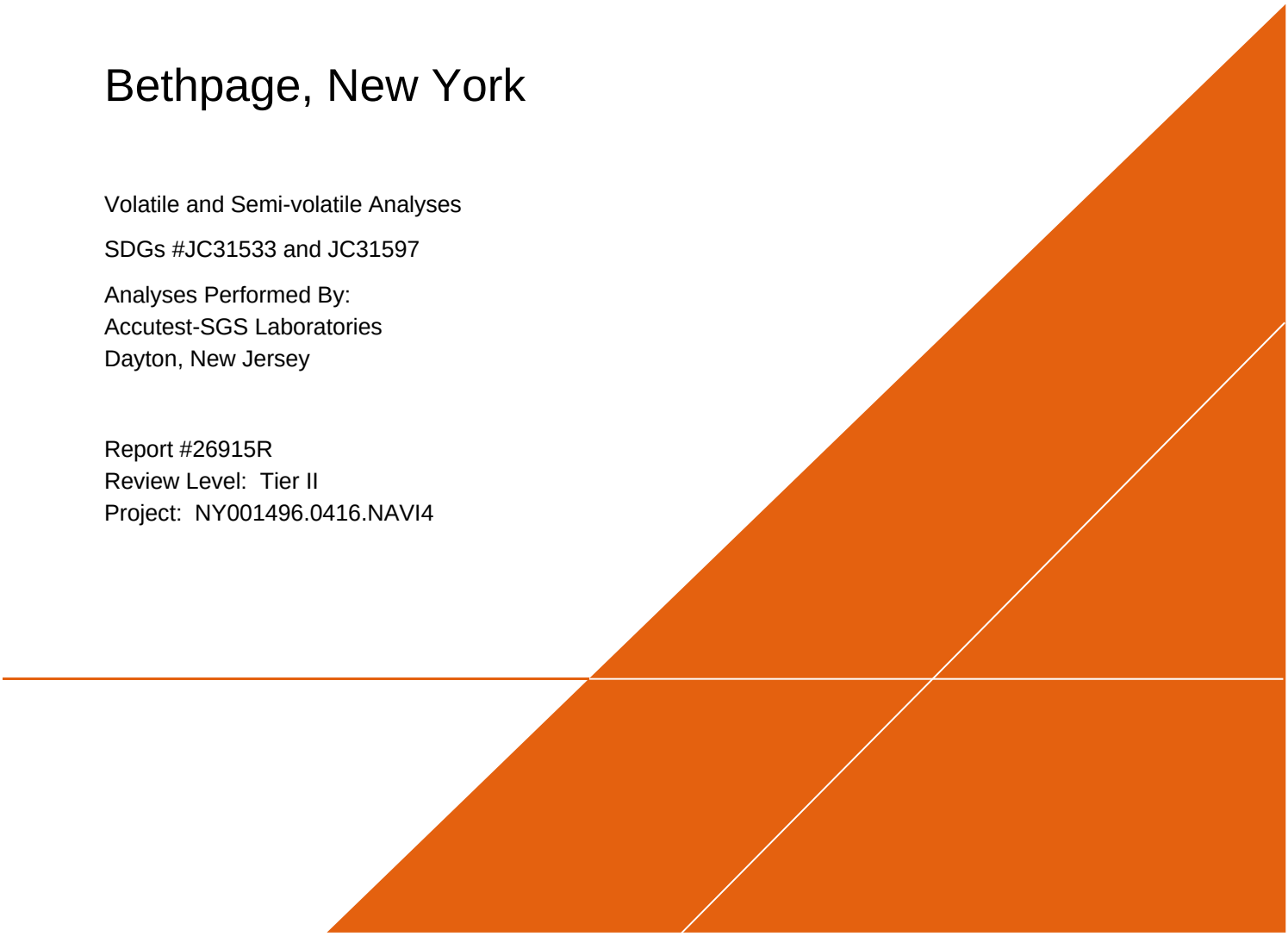
Bethpage, New York

Volatile and Semi-volatile Analyses

SDGs #JC31533 and JC31597

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #26915R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #JC31533 and JC31597 for samples collected in association with the Navy Wells ~~Northrop Grumman~~ Bethpage Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC31533	BPOW5-7	JC31533-1	Water	11/09/2016		X	X			
	TB110916MO1	JC31533-2	Water	11/09/2016		X				
JC31597	BPOW6-3	JC31597-1	Water	11/10/2016		X	X			
	BPOW6-4	JC31597-2	Water	11/10/2016		X	X			
	TB111016MO1	JC31597-3	Water	11/10/2016		X				

Note:

1. EPA Method 522 Semi-volatile analysis for 1,4-Dioxane was performed by GEL Laboratories, LLC, located in Charleston, South Carolina (subcontracted via Accutest Laboratory). The associated SDGs are: JC31533X/410517 and JC31597X/410629.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 524.2 and 522-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 524.2	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required in either SDGs.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with SDGs JC31533 or JC31597.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in both SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either of the SDGs.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A laboratory duplicate was not performed on a sample location associated with SDGs JC31533 or JC31597.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: EPA 524.2	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X	X		
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 522-SIM	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination in either SDG.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits in both SDGs.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not performed on a sample location associated with SDGs JC31533 or JC31597**.**

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits for both SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either SDGs.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

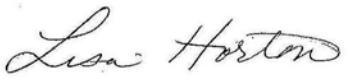
SVOCs: EPA 522-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 3, 2017

PEER REVIEW: Todd Church

DATE: January 5, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC31533

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Mike Osborn Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	B8OW5-7		11/09/16	1610	MO	GW	5	3								2	3	2	SVB
2	TB110916M01		11/09/16	0900	—	TB	2	2									2		V494

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

INITIAL ASESSMENT 2B
LABEL VERIFICATION JK

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU 2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/9/16 1800	1 [signature] 11/10/16 12:00	2 [signature]	11/10/16 18:00	2 [signature]
3		3	4		4
5		5			

Custody Seal # ☐ Intact ☐ Not intact
Preserved where applicable ☐
On Ice ☐
Cooler Temp. 4.3°C

JC31533: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW5-7
Lab Sample ID: JC31533-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/09/16
Date Received: 11/10/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106582.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	0.089	0.50	0.055	ug/l	J
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	BPOW5-7		
Lab Sample ID:	JC31533-1	**Date Sampled:**	11/09/16
Matrix:	AQ - Ground Water	**Date Received:**	11/10/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY		

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	100%		78-114%
460-00-4	4-Bromofluorobenzene	97%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB110916MO1
Lab Sample ID: JC31533-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/09/16
Date Received: 11/10/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106427.D	1	11/14/16	BK	n/a	n/a	V1B5051
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.4	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	0.10	0.50	0.076	ug/l	J
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB110916MO1
Lab Sample ID: JC31533-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/09/16
Date Received: 11/10/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	77%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

4105179

CHAIN OF CUSTODY

SGS ACCUTEST

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC31533X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MO Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SB522SIM14DIOX .14 Dioxane via 522 method low pql needed ,

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4		LAB USE ONLY
1X	BPOW5-7		11/9/16	4:10:00 PM	MO	AQ	2									2	X	SUB

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 12/1/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 11/10/16 17:00	Received By: 1 fedEx	Relinquished By: 2	Date Time: 11.12.16 0900	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

2

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC31533X GEL Work Order: 410517

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 21 NOV 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31533X**	**Date Collected:**	**11/09/2016 16:10**	**Matrix:**	**WATER**
Lab Sample ID:	**410517001**	**Date Received:**	**11/12/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW5-7**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1616479**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/18/2016 02:42**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/17/2016 12:00**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s111716.B\s6k1723.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC31597

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Robert Szczepanski, Odong Phone #: 516 661 7040

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells
Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (If different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Na2S2O3	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW6-3		11/10/16	1150	AR	GW	5	Y							X	3	3	2	V503
2	BPOW 6-4		11/10/16	1210	MO	GW	5	X							X	3	3	2	
3	TB 111016 mo1		11/10/16	0900	—	TB	2	X								2	2		

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT/A Dom
LABEL VERIFICATION JK

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Albina Kochepapie	11/11/16 15:30	Chris Laul 11/11/16 9:45	Chris Laul	11/11/16 16:20	
2	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3				4		
4	Relinquished by:	Date Time:	Received By:	Custody Seal # 706 Intact / Not Intact	Preserved where applicable	On Ice ☒ Cooler Temp. 2.0 °C IR
5						

5.1
5

JC31597: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW6-3
Lab Sample ID: JC31597-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106573.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-3
Lab Sample ID: JC31597-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	96%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: BPOW6-4
Lab Sample ID: JC31597-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106574.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-4
Lab Sample ID: JC31597-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	94%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB111016MO1
Lab Sample ID: JC31597-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106575.D	1	11/19/16	BK	n/a	n/a	V1B5057
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1.3	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB111016MO1
Lab Sample ID: JC31597-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/10/16
Date Received: 11/11/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	97%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

GW WTB

410629

CHAIN OF CUSTODY

PAGE 1 OF 1

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking # #4 | Bottle Order Control #

Accutest Quote # | Accutest Job # JC31597

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Radzapopic, Oldham Phone #: 516 661 7400

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells
Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #:
Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (If different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Na2S2O3	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW6-3		11/10/16	1150	AR	GW	5	Y								X	3	2	V503
2	BPOW 6-4		11/10/16	1210	MA	GW	5	X								X	3	2	
3	TB111016 mal		11/10/16	0900	—	TB	2	X									2		

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

INITIAL ASSESSMENT/A Dom

LABEL VERIFICATION

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Albina Radzapopic	11/10/16 15:30	Chris Land	Chris Land	11/11/16 16:20	
2			11/11/16 9:45			
3	Sandy Mount	11-14-16 1800	FEDEX		11/15/16 9:20	
4						
5				Custody Seal # 706 Intact / Not intact	Preserved where applicable	On Ice ✓ Cooler Temp. 2.0°C IP

SEAL # 489

2

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC31597X GEL Work Order: 410629

The Qualifiers in this report are defined as follows:

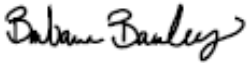
* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
B Target analyte was detected in the sample as well as the associated blank.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit or indicates that the analyte recovery in the MS or MSD is outside of specified acceptance criteria.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Barbara Bailey**

Date: 06 DEC 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31597X**	**Date Collected:**	**11/10/2016 11:50**	**Matrix:**	**WATER**
Lab Sample ID:	**410629001**	**Date Received:**	**11/15/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-3**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1618987**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/30/2016 23:11**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/30/2016 12:45**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s113016.B\s6k3033.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC31597X**	**Date Collected:**	**11/10/2016 12:10**	**Matrix:**	**WATER**
Lab Sample ID:	**410629002**	**Date Received:**	**11/15/2016 09:00**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-4**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1618987**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**11/30/2016 23:38**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**11/30/2016 12:45**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s113016.B\s6k3034.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	J	0.103	ug/L	0.100	0.100	0.200

Navy Wells

~~Northrop Grumman Corporation -~~

Operable Unit 2

Data Review

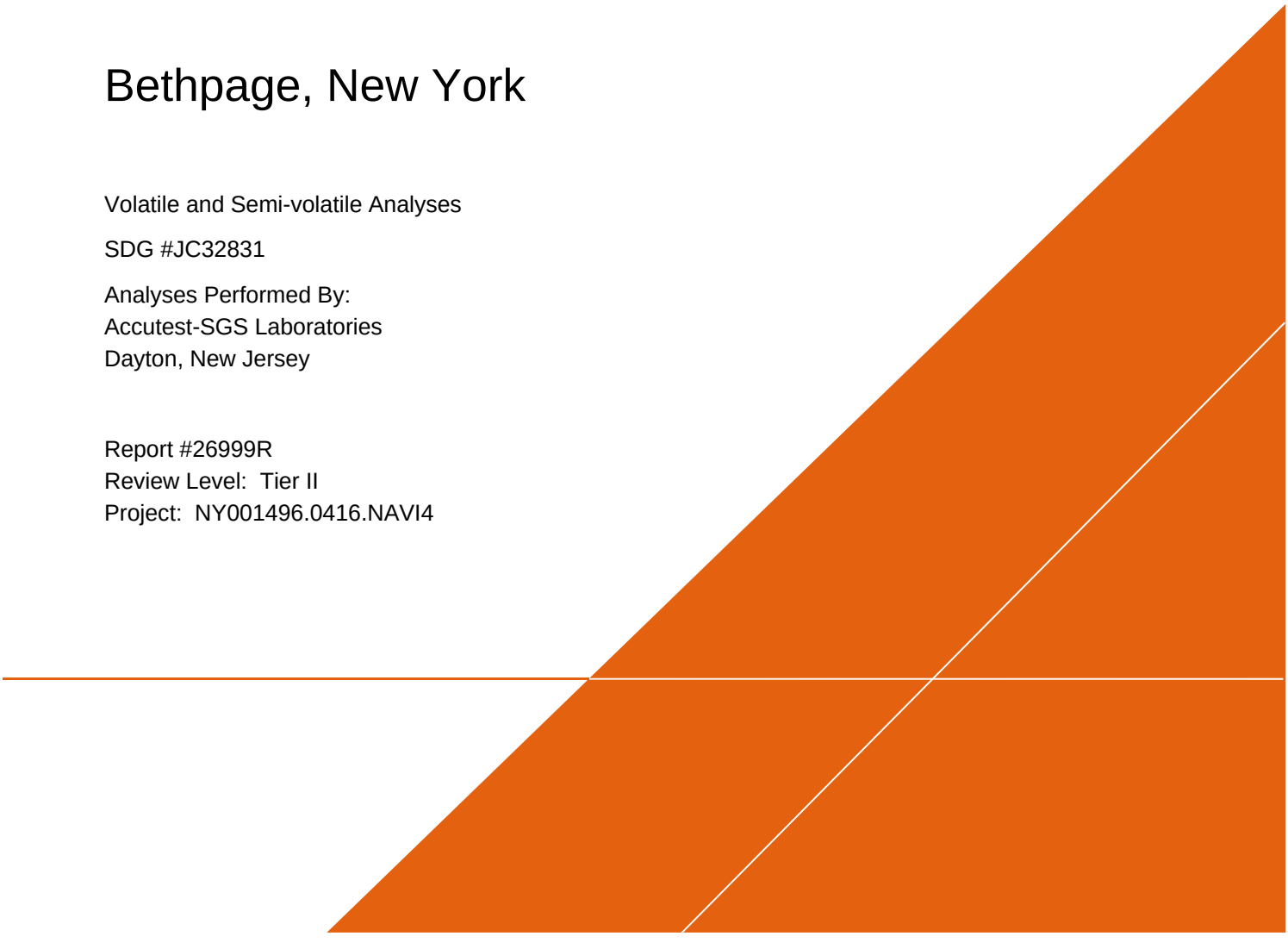
Bethpage, New York

Volatile and Semi-volatile Analyses

SDG #JC32831

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #26999R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #JC32831 for samples collected in association with the Navy Wells ~~Northrop Grumman~~ Bethpage Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC32831	BPOW6-1	JC32831-1	Water	12/01/2016		X	X			
	TB120116MD1	JC32831-1	Water	12/01/2016		X				

Note:

1. EPA Method 522 Semi-volatile analysis for 1,4-Dioxane was performed by GEL Laboratories, LLC, located in Charleston, South Carolina (subcontracted via Accutest Laboratory). The associated SDGs are: JC32831X/411922.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 524.2 and 522-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and

provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 524.2	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with SDG JC32831.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with SDG JC32831.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A laboratory duplicate was not performed on a sample location associated with SDG JC32831.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: EPA 524.2	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X	X		
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 522-SIM	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

Note:

s.u. Standard units

The analyses that exceeded the temperature criteria are presented in the following table.

Sample Locations	Holding Time	Criteria
BPOW6-1	9 °C	Cool to <6 °C

Sample results associated with sample locations analyzed by analytical method EPA 522-SIM were qualified, as specified in the table below. All other criteria were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed less than two times temperature criteria	J	UJ

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS/MSD was not performed on a sample location associated with SDG JC32831**.**

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with SDG JC32831.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

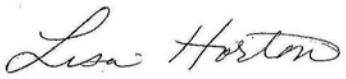
SVOCs: EPA 522-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times/temperature		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 11, 2017

PEER REVIEW: Todd Church

DATE: January 13, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

R

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC32831

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Orabona Phone #: 516-661-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	DPOW 6-1		12/1/16	1315	MO	GW	5									2	3	2	SUB
2	TB120116M01		12/1/16	0900	—	TB	2										3		
																			V681

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

INITIAL ASESSMENT 2B Dom

LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1 [signature]	1645 12/1/16	1 Chris Lard 12/2/16/10:55	2 Chris Lard	12/2/16/1845	2 [signature]
3		3	4		4
5		5	Custody Seal # 737 [x] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [x] Cooler Temp. 2.1°C IG

5.1
5

JC32831: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW6-1
Lab Sample ID: JC32831-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106891.D	1	12/06/16	BK	n/a	n/a	V1B5073
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: BPOW6-1
Lab Sample ID: JC32831-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	91%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB120116MD1
Lab Sample ID: JC32831-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106892.D	1	12/06/16	BK	n/a	n/a	V1B5073
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	2.1	5.0	0.53	ug/l	J
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	0.15	0.50	0.087	ug/l	J
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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: TB120116MD1
Lab Sample ID: JC32831-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: Navy Wells ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	101%		78-114%
460-00-4	4-Bromofluorobenzene	87%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

411922 c/.

SGS ACCUTEST — CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # JC32831X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MD Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed	LAB USE ONLY
1X	BPOW6-1		12/1/16	1:15:00 PM	MD	AQ	2									2	X	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other 21

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler: B Vassilakos	Date Time: 12/5/16 1700	Received By: 1 Fed Ex	Relinquished By: 2	Date Time: 12-6-16 9:50	Received By: 2
3 Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5 Relinquished by:	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp.

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC32831

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Orabona 516-64-7064 Phone #:

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	5035	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	DPDW64		12/1/16	1315	MO	GW	5								2	3	2	2	SUB
2	TB120116M01		12/1/16	0900	—	TB	2												V681

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

OU2 Hydro

INITIAL ASESSMENT 2B DOM

LABEL VERIFICATION

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		1655 12/1/16	1 Chris Ford 12/2/16 10:55	2 Chris Ford	12/2/16 1645	2
3	Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal # 7537 [x] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [x] Cooler Temp. 2.1 °C/G

JC32831X: Chain of Custody
Page 1 of 2

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: JC32831X GEL Work Order: 411922

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 09 DEC 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**JC32831X**	**Date Collected:**	**12/01/2016 13:15**	**Matrix:**	**WATER**
Lab Sample ID:	**411922001**	**Date Received:**	**12/06/2016 09:50**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW6-1**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1621506**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**12/08/2016 16:51**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**12/08/2016 12:45**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s120816.B\s6L0807.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U J	0.100	ug/L	0.100	0.100	0.200

ARCADIS Design & Consultancy for natural and built assets

Navy Wells-

Operable Unit 2

Data Review

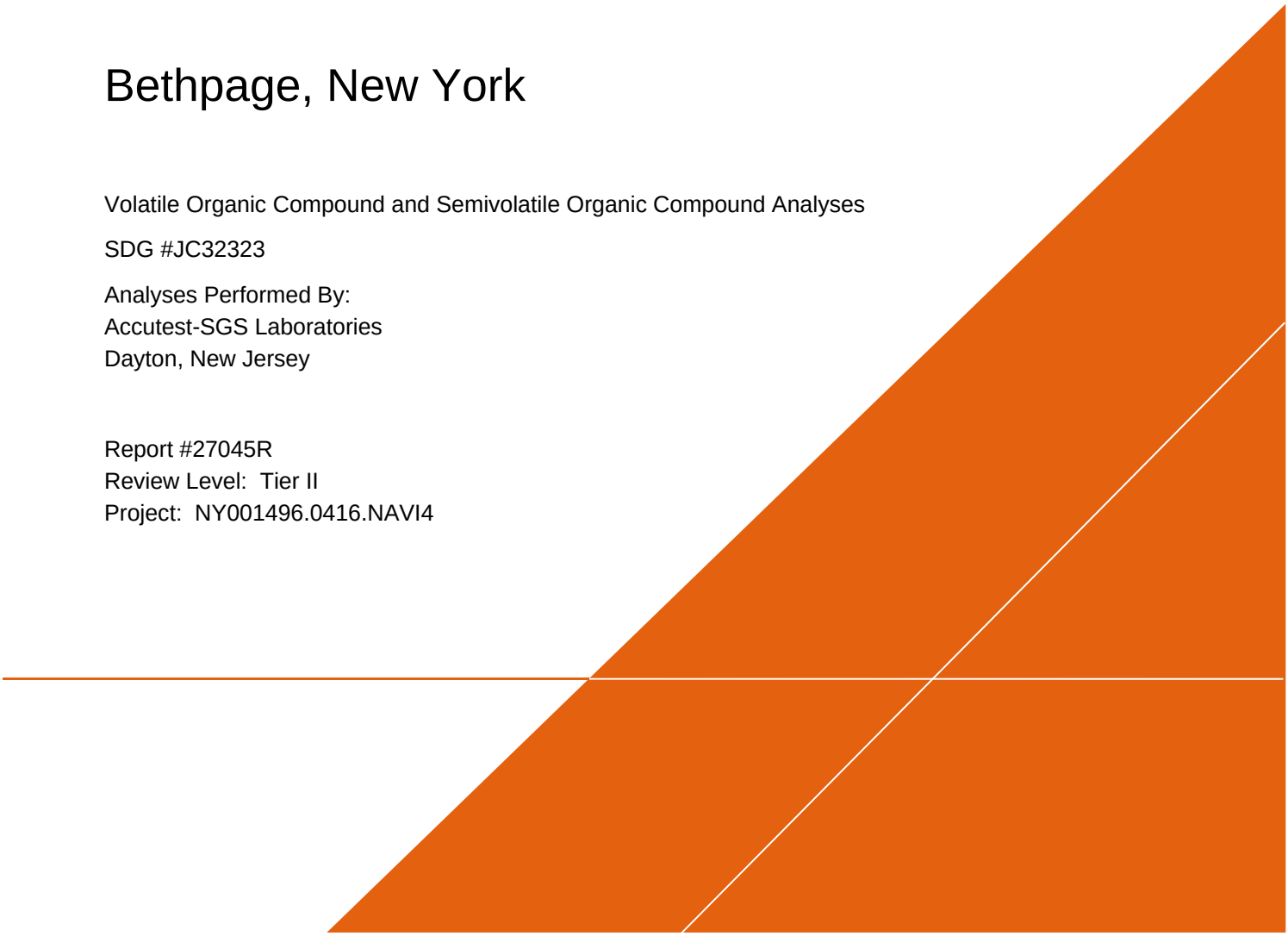
Bethpage, New York

Volatile Organic Compound and Semivolatile Organic Compound Analyses

SDG #JC32323

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #27045R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #JC32323 for samples collected in association with the Navy Wells-Bethpage, NY Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC32323	FB112216PP1	JC32323-1	Water	11/22/2016		X	X			
	TB112216PP1	JC32323-2	Water	11/22/2016		X				
	RE-119D1	JC32323-3	Water	11/22/2016		X	X			

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) method 8260C and 8270D-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with this SDG.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

The laboratory duplicate sample analysis exhibited RPD below the control limits.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260C	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
C. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 8270D-SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6°C

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with this SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

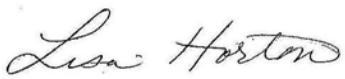
SVOCs: EPA 8270D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 19, 2016

PEER REVIEW: Todd Church

DATE: January 24, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW FB WTB Short Hold

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #5
Bottle Order Control #
Accutest Quote #
Accutest Job # JC32323

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Pat Prezorski Phone #: 516-287-6247

Project Information

Project Name: AGMNYM62235 // OU2 Monitoring Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.~~0216.GWMI3~~ 0416 NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VC82602NG36GW+40	Cd, Cr (Total) 6010C	Cd, Cr (Dissolved, Field Filtered) 6010C	1,4-dioxane USEPA Method ~~522~~ 8270D	LAB USE ONLY
1	FB112216PP1		11/22/16	1230	[illegible]	~~GW~~ FB	5	3				2				3			2	E59
2	TB112216PP1		11/22/16	1200	—	TB	2	2								2				V608
3	RE-119D1		11/22/16	1550	[illegible]	GW	5	3				2				3			2	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT 3B [illegible]
LABEL VERIFICATION SV

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

RL reporting for metals
1,4 Dioxane samples are Method 8270D
OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11-22-16 1920	1 FEDX	2 FEDX	11/23/16 930	2 [signature]
3		3	4		4
5		5	Custody Seal # 191 ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☒ Cooler Temp. 3.3°C

EX: 7847 2924 [illegible]

JC32323: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: FB112216PP1
Lab Sample ID: JC32323-1
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/22/16
Date Received: 11/23/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B146391.D	1	12/05/16	EH	n/a	n/a	V2B6489
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID:	FB112216PP1		
Lab Sample ID:	JC32323-1	**Date Sampled:**	11/22/16
Matrix:	AQ - Field Blank Water	**Date Received:**	11/23/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY Navy Wells		

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		76-120%
17060-07-0	1,2-Dichloroethane-D4	94%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	96%		78-117%

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

Client Sample ID: FB112216PP1
Lab Sample ID: JC32323-1
Matrix: AQ - Field Blank Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 11/22/16
Date Received: 11/23/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P19856.D	1	11/30/16	JJ	11/28/16	OP98800A	E4P1077
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.11	0.054	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	84%		24-125%
321-60-8	2-Fluorobiphenyl	61%		19-127%
1718-51-0	Terphenyl-d14	82%		10-119%

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: TB112216PP1
Lab Sample ID: JC32323-2
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 11/22/16
Date Received: 11/23/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B146366.D	1	12/04/16	EH	n/a	n/a	V2B6488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: TB112216PP1
Lab Sample ID: JC32323-2
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/22/16
Date Received: 11/23/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		76-120%
17060-07-0	1,2-Dichloroethane-D4	93%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	99%		78-117%

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

Client Sample ID: RE-119D1
Lab Sample ID: JC32323-3
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/22/16
Date Received: 11/23/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B146358.D	1	12/04/16	EH	n/a	n/a	V2B6488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: RE-119D1
Lab Sample ID: JC32323-3
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/22/16
Date Received: 11/23/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		76-120%
17060-07-0	1,2-Dichloroethane-D4	91%		73-122%
2037-26-5	Toluene-D8	97%		84-119%
460-00-4	4-Bromofluorobenzene	99%		78-117%

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

Client Sample ID: RE-119D1
Lab Sample ID: JC32323-3
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/22/16
Date Received: 11/23/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P19857.D	1	11/30/16	JJ	11/28/16	OP98800A	E4P1077
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.11	0.053	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	88%		24-125%
321-60-8	2-Fluorobiphenyl	71%		19-127%
1718-51-0	Terphenyl-d14	75%		10-119%

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

ARCADIS Design & Consultancy for natural and built assets

Navy Wells-

Operable Unit 2

Data Review

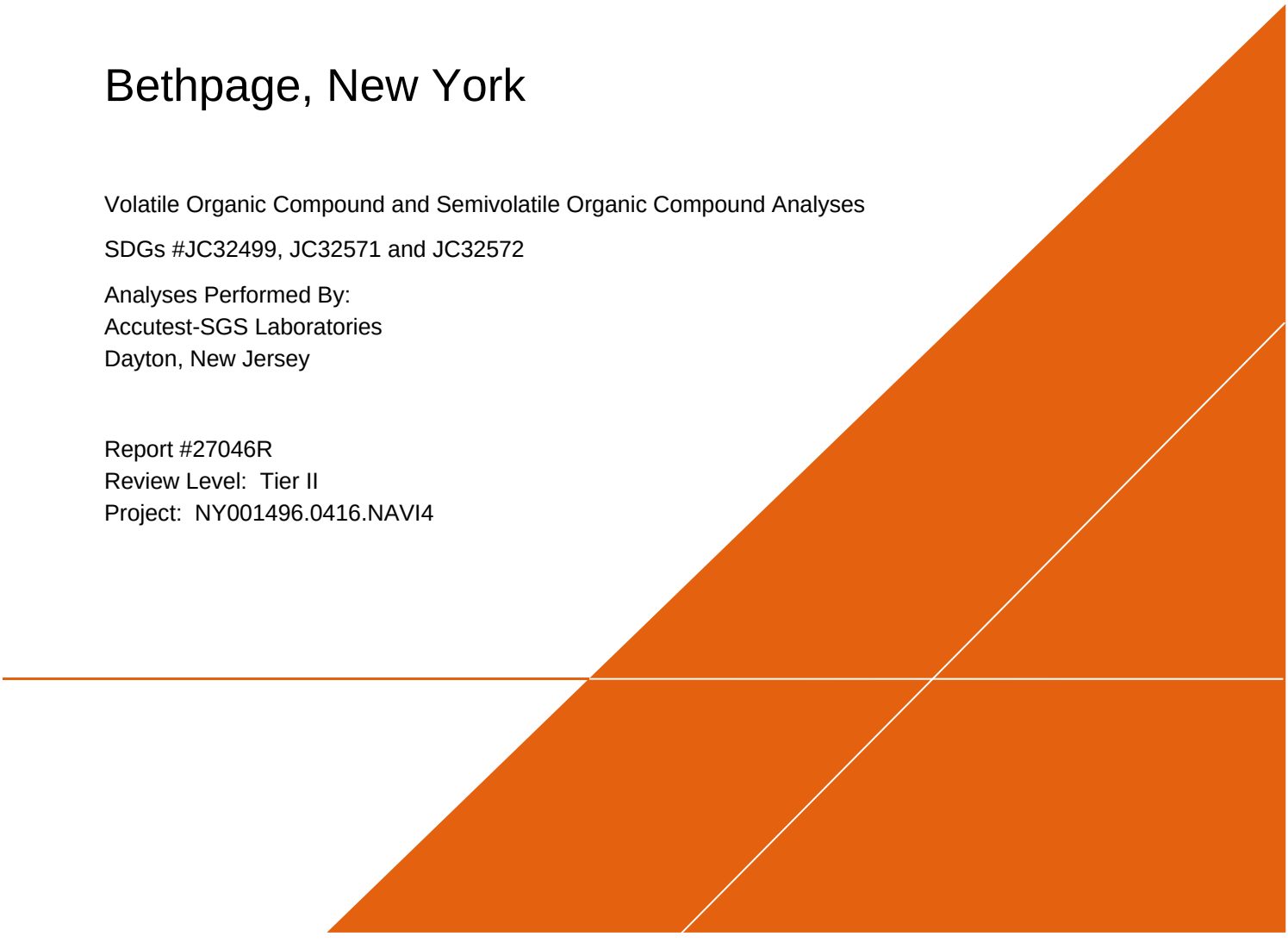
Bethpage, New York

Volatile Organic Compound and Semivolatile Organic Compound Analyses

SDGs #JC32499, JC32571 and JC32572

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #27046R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #JC32499, JC32571 and JC32572 for samples collected in association with the Navy Wells-Bethpage, NY Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC32499	RE-118D1	JC32499-1	Water	11/28/2016		X	X			
	FB112816PP1	JC32499-2	Water	11/28/2016		X	X			
	TB112816PP1	JC32499-3	Water	11/28/2016		X				
JC32571	BPOW1-6	JC32571-1	Water	11/29/2016		X	X*			
	TB112916MO1	JC32571-2	Water	11/29/2016		X				
JC32572	TT-102D	JC32572-1	Water	11/29/2016		X	X			
	TT-102D2	JC32572-2	Water	11/29/2016		X	X			
	TB112916PP1	JC32572-3	Water	11/29/2016		X				

Notes:

1. * EPA Method 522 Semi-volatile analysis for 1,4-Dioxane was performed by GEL Laboratories, LLC, located in Charleston, South Carolina (subcontracted via Accutest Laboratory). The associated SDG is: JC32571X/411680.
2. In SDG JC32499, matrix spike (MS) analysis was performed on sample location RE-118D1 for VOC analysis.
3. In SDG JC32571, matrix spike/matrix spike duplicate (MS/MSD) analysis was performed on sample location BPOW1-6 for VOC analysis.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 8260C, 524.2 and 8270D-Selected Ion Monitoring (SIM) and 522-SIm. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.
EPA 524.2	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

In SDG JC32499: Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

In SDGs JC32571 and JC32572: Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS exhibited acceptable recoveries in SDG JC32499.

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
SDG JC32571: BPOW1-6	Benzene
	Bromodichloromethane
	Bromoform
	Bromomethane
	Chlorobenzene
	Chloroform
	1,1-Dichloroethane
	1,2-Dichloroethane
	1,2-Dichloropropane
	Dibromochloromethane
	cis-1,2-Dichloroethylene
	cis-1,3-Dichloropropene
	trans-1,3-Dichloropropene
	Ethylbenzene
	Methylene chloride
	Styrene
	1,1,1-Trichloroethane
	1,1,2,2-Tetrachloroethane
	1,1,2-Trichloroethane
	Toluene
	Trichloroethylene
	m,p-Xylene
	o,p-Xylene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

A MS was not performed on a sample location associated with SDG JC32572.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in SDGs JC32499 and JC32572.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
BPOW1-6 TB112916MO1	Freon 113	>UL

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with these SDGs.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

The laboratory duplicate sample was not performed on a sample location associated with these SDGs.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260C and 524.2	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
C. Trip blanks		X	X		
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 8270D-SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6°C
EPA 522-SIM	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS was not performed on a sample location associated with these SDGs.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with these SDGs.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

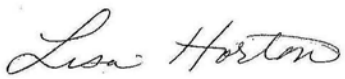
SVOCs: EPA 8270D-SIM and 522-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 20, 2016

PEER REVIEW: Todd Church

DATE: January 24, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW
FB
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #5 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC32499

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Pat Prezont Phone #: 516-287-6247

Project Information

Project Name: AGMNYM62235 // OU2 Monitoring Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: 0416, NAVI3 NY001496.~~0216.GWM13~~
Client Purchase Order #:
Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VC82602NG36GW+40	Cd, Cr (Total) 6010C	Cd, Cr (Dissolved, Field Filtered) 6010C	1,4-dioxane USEPA Method ~~8260~~ 8270D	LAB USE ONLY
1	RE-118D1		11/28/16	1435	PP/SP	GW	5	3				2				3			2	E19
2	FB112816PP1		11/28/16	1200	PP	FB	5	3				2				3			2	V626
3	TB112816PP1		11/29/16	1130	—	TB	2	2								2				

INITIAL ASSESSMENT 10/02
LABEL VERIFICATION SH

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labline

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

RL reporting for metals
1,4 Dioxane Method 8270D
OU 2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Pat Prezont	11/28/16 1930	1 Chris Lau	2 Chris Lau	11/29/16 1730	2
3	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
5	Relinquished by:	Date Time:	Received By:	Custody Seal # 740 [X] Intact [ ] Not Intact	Preserved where applicable [ ]	On Ice Cooler Temp. 2.9° 45F

Report of Analysis

Client Sample ID: RE-118D1
Lab Sample ID: JC32499-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A227891.D	1	12/05/16	GA	n/a	n/a	VA8610
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: RE-118D1
Lab Sample ID: JC32499-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		76-120%
17060-07-0	1,2-Dichloroethane-D4	97%		73-122%
2037-26-5	Toluene-D8	100%		84-119%
460-00-4	4-Bromofluorobenzene	98%		78-117%

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

Client Sample ID: RE-118D1
Lab Sample ID: JC32499-1
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P56862.D	1	12/01/16	SG	11/30/16	OP98869A	E3P2631
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.11	0.053	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	71%		24-125%
321-60-8	2-Fluorobiphenyl	76%		19-127%
1718-51-0	Terphenyl-d14	59%		10-119%

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: FB112816PP1
Lab Sample ID: JC32499-2
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B67183.D	1	12/11/16	HT	n/a	n/a	V4B2763
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: FB112816PP1
Lab Sample ID: JC32499-2
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		76-120%
17060-07-0	1,2-Dichloroethane-D4	111%		73-122%
2037-26-5	Toluene-D8	101%		84-119%
460-00-4	4-Bromofluorobenzene	105%		78-117%

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

Client Sample ID: FB112816PP1
Lab Sample ID: JC32499-2
Matrix: AQ - Field Blank Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY Navy Wells

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P56914.D	1	12/02/16	SG	11/30/16	OP98869A	E3P2636
Run #2							

	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	62%		24-125%
321-60-8	2-Fluorobiphenyl	69%		19-127%
1718-51-0	Terphenyl-d14	81%		10-119%

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: TB112816PP1
Lab Sample ID: JC32499-3
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B67184.D	1	12/11/16	HT	n/a	n/a	V4B2763
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: TB112816PP1
Lab Sample ID: JC32499-3
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/28/16
Date Received: 11/29/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		76-120%
17060-07-0	1,2-Dichloroethane-D4	110%		73-122%
2037-26-5	Toluene-D8	100%		84-119%
460-00-4	4-Bromofluorobenzene	106%		78-117%

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

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4	Bottle Order Control #
Accutest Quote #	Accutest Job # JC32571

Client / Reporting Information

Company Name	Arcadis
Street Address	2 Huntington Quad, Suite 1S10
City / State / Zip	Melville NY 11747
Project Contact / E-mail	Soma Das, soma.das@arcadis-us.com
Phone # / Fax #	631-249-7600 631-249-7610
Sampler(s) Name(s) / Phone #	Michael Orabona 516/66/706

Project Information

Project Name:	AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street	
City / State	Bethpage NY
Project #	NY001496.0416.NAVI3
Client Purchase Order #	Work Authorization #: NY001496_2015
Project Manager	Carlo San Giovanni

Billing Information (if different from Report to)

Company Name	Arcadis, U.S., Inc. Attn: Accts Payable
Street Address	630 Plaza Drive, Suite 600
City / State / Zip	Highlands Ranch, CO 80129
Attention:	Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	V5242NG36GW+40	1,4-dioxane USEPA Method 522	LAB USE ONLY
1	BPOW 1-6		11/29/2016	1510	MO	GW	15	9								6	9	6	V638
2	TB112916MO1		11/29/2016	9:00	—	TB	2	2									2		SUB

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT ZAS
LABEL VERIFICATION

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Triple volume collected for BPOW 1-6, use for MS/MSD.

OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	1535 11/29/16	1 Chris Laul 11/30/16/1145	2 Chris Laul	11/30/16/1745	2 [signature]
3		3	4		4
5		5	Custody Seal # 748, 750 ☒ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☒ Cooler Temp. 2.4°

5.1
5

JC32571: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: BPOW1-6
Lab Sample ID: JC32571-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106800.D	1	12/01/16	BK	n/a	n/a	V1B5069
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	J
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	J
75-25-2	Bromoform	ND	0.50	0.083	ug/l	J
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	J
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	J
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	J
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	J
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	J
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	J
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	J
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	J
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	J
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	J
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	J
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	J
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	J
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	J
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	0.072	0.50	0.054	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: BPOW1-6
Lab Sample ID: JC32571-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

Navy Wells

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	J
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	J
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	97%		78-114%
460-00-4	4-Bromofluorobenzene	97%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TB112916MO1
Lab Sample ID: JC32571-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106807.D	1	12/01/16	BK	n/a	n/a	V1B5069
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	0.16	0.50	0.087	ug/l	J
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113 [b]	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB112916MO1
Lab Sample ID: JC32571-2
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	99%		78-114%
460-00-4	4-Bromofluorobenzene	95%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.
(b) This compound in BS is outside in house QC limits bias high.

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

SGS ACCUTEST

CHAIN OF CUSTODY

4/1680

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com

Page 1 of 1

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job JC32571X

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: Daniel.axelrod@sgs.com E-mail:
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): MO Phone:

Project Information

Project Name: Northrop Grumman, OU2 Hydro, Bethpage, NY
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	NaHSO4	SB522SIM14DIOX ,14 Dioxane via 522 method low pql needed	LAB USE ONLY
1X	BPOW1-6		11/29/16	3:10:00 PM	MO	AQ	7									2	X	MS/MSD

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 12/21/2016

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 12-1-16 1700	Received By: 1 FEDEX	Relinquished By: 2	Date Time: 12-2-16 9:20	Received By: 2 12-2-16 9:20
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # 525 [ ] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [ ] Cooler Temp.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

ACTL003 SGS Accutest

Client SDG: 411680 GEL Work Order: 411680

The Qualifiers in this report are defined as follows:

* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
** Indicates the analyte is a surrogate compound.
J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit or indicates that the analyte recovery in the MS or MSD is outside of specified acceptance criteria.
U Indicates the target analyte was analyzed for but not detected above the detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 08 DEC 2016 **Title: Data Validator**

2

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**411680**	**Date Collected:**	**11/29/2016 15:10**	**Matrix:**	**WATER**
Lab Sample ID:	**411680001**	**Date Received:**	**12/02/2016 09:20**		
		Client:	**ACTL003**	**Project:**	**ACTL00316**
Client ID:	**BPOW1-6**	**Method:**	**EPA 522**	**SOP Ref:**	**GL-OA-E-073**
Batch ID:	**1620546**	**Inst:**	**MSD6.I**	**Dilution:**	**1**
Run Date:	**12/07/2016 11:35**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**12/06/2016 12:20**	**Aliquot:**	**100 mL**	**Final Volume:**	**2 mL**
Data File:	**s120716.B\s6L0705.D**		**RTX-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL	LOD	LOQ
123-91-1	1,4-Dioxane	U	0.100	ug/L	0.100	0.100	0.200

SGS ACCUTEST
JC32571X

ACCUTEST LABORATORIES

GW
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4
Bottle Order Control #
Accutest Quote #
Accutest Job # JC32572

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Pat Prezorski Phone #: 516-287-6247

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V5242NG36GW+40	1,4-dioxane USEPA Method ~~522~~ 8270D	LAB USE ONLY
1	TT-102D		11/29/16	1240	PP/SN	GW	5	3					2			3	2	E28
2	TT-102D2		11/29/16	1220	PP/SN	GW	5	3					2			3	2	V637
3	TB112916PP1		11/29/16	1200	—	TB	2	2								2		

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT 2808
LABEL VERIFICATION

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

1,4 Dioxane Is Method 8270D
OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Pat Prezorski	11/29/16 1830	1 Chris Laul Date Time: 11/30/16 11:45	2 Chris Laul	11/30/16 1745	2
3		3	4		4
5		5	Custody Seal # 746	☒ Intact ☐ Not intact	Preserved where applicable ☐ On Ice ☒ Cooler Temp. 2.5°

JC32572: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: TT-102D
Lab Sample ID: JC32572-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106832.D	1	12/02/16	BK	n/a	n/a	V1B5070
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TT-102D
Lab Sample ID: JC32572-1
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

Navy Wells

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	98%		78-114%
460-00-4	4-Bromofluorobenzene	92%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TT-102D
Lab Sample ID: JC32572-1
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P56989.D	1	12/06/16	SG	12/01/16	OP98887A	E3P2641
Run #2							

	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	60%		24-125%
321-60-8	2-Fluorobiphenyl	64%		19-127%
1718-51-0	Terphenyl-d14	71%		10-119%

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: TT-102D2
Lab Sample ID: JC32572-2
Matrix: AQ - Ground Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106833.D	1	12/02/16	BK	n/a	n/a	V1B5070
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	ND	0.50	0.087	ug/l	
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID:	TT-102D2		
Lab Sample ID:	JC32572-2	**Date Sampled:**	11/29/16
Matrix:	AQ - Ground Water	**Date Received:**	11/30/16
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY		

Navy Wells

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	96%		78-114%
460-00-4	4-Bromofluorobenzene	93%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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: TT-102D2
Lab Sample ID: JC32572-2
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P56990.D	1	12/06/16	SG	12/01/16	OP98887A	E3P2641
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%		24-125%
321-60-8	2-Fluorobiphenyl	71%		19-127%
1718-51-0	Terphenyl-d14	94%		10-119%

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: TB112916PP1
Lab Sample ID: JC32572-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1B106834.D	1	12/02/16	BK	n/a	n/a	V1B5070
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	0.53	ug/l	
78-93-3	2-Butanone	ND	5.0	0.59	ug/l	
71-43-2	Benzene	ND	0.50	0.051	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.059	ug/l	
75-25-2	Bromoform	ND	0.50	0.083	ug/l	
74-83-9	Bromomethane	ND	0.50	0.062	ug/l	
75-15-0	Carbon disulfide	ND	0.50	0.055	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.055	ug/l	
75-00-3	Chloroethane	ND	0.50	0.076	ug/l	
67-66-3	Chloroform	0.15	0.50	0.087	ug/l	J
74-87-3	Chloromethane	ND	0.50	0.18	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.073	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.064	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.18	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.047	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.074	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.078	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.090	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.11	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.078	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.062	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.066	ug/l	
76-13-1	Freon 113	ND	1.0	0.18	ug/l	
591-78-6	2-Hexanone	ND	2.0	0.25	ug/l	
75-09-2	Methylene chloride	ND	0.50	0.076	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	2.0	0.24	ug/l	
100-42-5	Styrene	ND	0.50	0.094	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.065	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.091	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.11	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.049	ug/l	
108-88-3	Toluene	ND	0.50	0.054	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

Client Sample ID: TB112916PP1
Lab Sample ID: JC32572-3
Matrix: AQ - Trip Blank Water
Method: EPA 524.2 REV 4.1
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 11/29/16
Date Received: 11/30/16
Percent Solids: n/a

VOA OU2 Outpost List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.079	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.082	ug/l	
	m,p-Xylene	ND	0.50	0.11	ug/l	
95-47-6	o-Xylene	ND	0.50	0.060	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	96%		78-114%
460-00-4	4-Bromofluorobenzene	94%		77-115%

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

(a) EPA 524.2 is not a certified method for non-potable water samples.

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

ARCADIS Design & Consultancy for natural and built assets

Navy Wells-

Operable Unit 2

Data Review

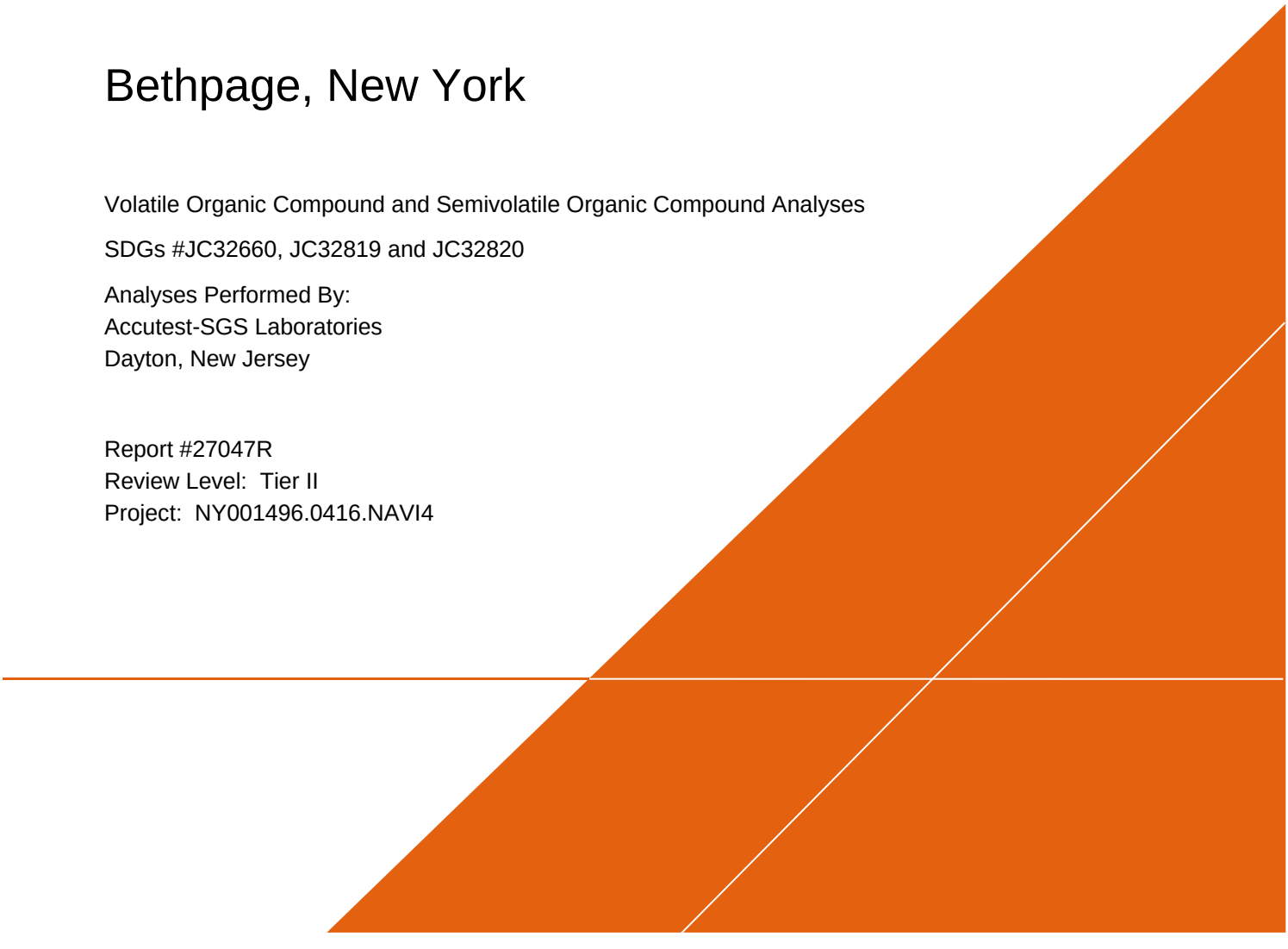
Bethpage, New York

Volatile Organic Compound and Semivolatile Organic Compound Analyses

SDGs #JC32660, JC32819 and JC32820

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #27047R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #JC32660, JC32819 and JC32820 for samples collected in association with the Navy Wells-Bethpage, NY Site. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC32660	RE-114D2	JC32660-1	Water	11/30/2016		X	X			
	RE-114D1	JC32660-2	Water	11/30/2016		X	X			
	TB113016PP1	JC32660-3	Water	11/30/2016		X				
	FB113016PP1	JC32660-4	Water	11/30/2016		X	X			
JC32819	RE-121D1	JC32819-1	Water	12/02/2016		X	X			
	TB120216PP2	JC32819-2	Water	12/02/2016		X				
	FB120216PP2	JC32819-3	Water	12/02/2016		X	X			
	RE-121D2	JC32819-4	Water	12/02/2016		X	X			
	REP120216PP2	JC32819-5	Water	12/02/2016	RE-121D2	X	X			
JC32820	RE-114D3	JC32820-1	Water	12/01/2016		X	X			
	TB120116PP1	JC32820-2	Water	12/01/2016		X				
	FB120116PP1	JC32820-3	Water	12/01/2016		X	X			

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 8260C and 8270D-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

In SDG JC32660 and JC32820: Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

In SDGs JC32819: Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS analysis was not performed on a sample location associated with these SDGs.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in the SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SDG JC32819: RE-121D2/ REP120216PP2	Carbon tetrachloride	3.4	3.2	AC
	Chloroform	1.7	1.6	
	1,1-Dichloroethane	0.69 J	0.67 J	
	1,1-Dichloroethene	3.4	3.2	
	cis-1,2-Dichloroethene	2.1	2.1	
	Freon 113	15.4	14.9	
	Tetrachloroethene	0.34 J	0.33 J	
	1,1,1-Trichloroethane	0.47 J	0.50 J	
	1,1,2-Trichloroethane	0.59 J	0.55 J	
	Trichloroethene	591	630	6.4%

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

A field duplicate was not collected with a sample location associated with SDGs JC32660 or JC32820.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

The laboratory duplicate sample was not performed on a sample location associated with these SDGs.

8. System Performance and Overall Assessment

Sample results associated with compound that exhibited a concentration greater than the linear range of the instrument calibration are summarized in the following table.

Sample ID	Compound	Original Analysis	Diluted Analysis	Reported Analysis
SDG JC32660:				
RE-114D1	Trichloroethene	---	399 D	399 D
SDG JC32819:				
RE:121D2	Trichloroethene	---	591 D	591 D
REP120216PP2	Trichloroethene	---	630 D	630 D

Note: In the instance where both the original analysis and the diluted analysis sample results exhibited a concentration greater than and/or less than the calibration linear range of the instrument; the sample result exhibiting the greatest concentration will be reported as the final result.

Sample results associated with compounds exhibiting concentrations greater than the linear range are qualified as documented in the table below when reported as the final reported sample result.

Reported Sample Results	Qualification
Diluted sample result within calibration range	D
Diluted sample result less than the calibration range	DJ
Diluted sample result greater than the calibration range	EDJ
Original sample result greater than the calibration range	EJ

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Note: Carbon dioxide was reported as a TIC in some samples. Carbon dioxide is not considered a compound of concern and therefore was not evaluated.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260C	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X	X		
C. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 8270D-SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6°C

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A MS analysis was not performed on a sample location associated with these SDGs.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
RE-121D2/ REP120216PP2	1,4-Dioxane	2.77	2.56	7.9%

The calculated RPDs between the parent sample and field duplicate were acceptable.

A field duplicate was not collected with a sample location associated with SDGs JC32660 or JC32820.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

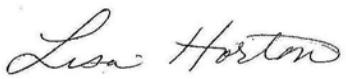
SVOCs: EPA 8270D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R					X
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 20, 2016

PEER REVIEW: Todd Church

DATE: January 24, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW
FB
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #5
Bottle Order Control #
Accutest Quote #
Accutest Job # JC32660

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Pat Prezeck Phone #: 516 287-6247

Project Information

Project Name: AGMNYM62235 // OU2 Monitoring Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496~~.0216.GWMI3~~ 0416.NAVI3
Client Purchase Order #:
Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VC82602NG36GW+40	Cd, Cr (Total) 6010C	Cd, Cr (Dissolved, Field Filtered) 6010C	1,4-dioxane USEPA Method ~~522~~ 8270D	LAB USE ONLY
1	RE-114D2		11/30/16	1425		GW	5	3				2				3			2	E30
2	RE-114D1		11/30/16	1420		GW	5	3				2				3			2	V654
3	TB113016PP1		11/30/16	1100		TB	2	2								2				
4	FB113016PP1		11/30/16	1120		FB	5	3				2				3			2	

INITIAL ASESSMENT 2A OK
LABEL VERIFICATION

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)
- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions
RL reporting for metals
1,4 Dioxane is Method 8270D
OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/30/16 1830	1 [signature] Date 12/1/16 Time 10:25	2 [signature]	12/1/16 16:50	2 [signature]
3		3	4		4
5		5			

Custody Seal # ☐ Intact ☐ Not intact
Preserved where applicable ☐
On Ice ☑
Cooler Temp. 2.7°C IG

5.1
5

JC32660: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: RE-114D2
Lab Sample ID: JC32660-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A227892.D	1	12/05/16	GA	n/a	n/a	VA8610
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	0.40	1.0	0.23	ug/l	J
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	0.57	1.0	0.21	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	0.89	1.0	0.20	ug/l	J
156-59-2	cis-1,2-Dichloroethene	1.0	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	8.4	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	0.40	1.0	0.28	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: RE-114D2
Lab Sample ID: JC32660-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	68.2	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		76-120%
17060-07-0	1,2-Dichloroethane-D4	96%		73-122%
2037-26-5	Toluene-D8	100%		84-119%
460-00-4	4-Bromofluorobenzene	96%		78-117%

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

Client Sample ID: RE-114D2
Lab Sample ID: JC32660-1
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P19988.D	1	12/04/16	SG	12/02/16	OP98915A	E4P1083
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.44	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		24-125%
321-60-8	2-Fluorobiphenyl	57%		19-127%
1718-51-0	Terphenyl-d14	52%		10-119%

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: RE-114D1
Lab Sample ID: JC32660-2
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E129061.D	1	12/14/16	JP	n/a	n/a	V2E5647
Run #2	2E129062.D	10	12/14/16	JP	n/a	n/a	V2E5647

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

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	2.5	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	2.8	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	1.3	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	4.1	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	4.7	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	14.5	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	0.54	1.0	0.22	ug/l	J
79-00-5	1,1,2-Trichloroethane	1.5	1.0	0.28	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

Client Sample ID: RE-114D1
Lab Sample ID: JC32660-2
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	399 [a]	10	2.6	ug/l	D
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%	97%	76-120%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	73-122%
2037-26-5	Toluene-D8	102%	102%	84-119%
460-00-4	4-Bromofluorobenzene	107%	107%	78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	3.57	350	ug/l	JB
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

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: RE-114D1
Lab Sample ID: JC32660-2
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P19989.D	1	12/04/16	SG	12/02/16	OP98915A	E4P1083
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	4.34	0.11	0.053	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	75%		24-125%
321-60-8	2-Fluorobiphenyl	52%		19-127%
1718-51-0	Terphenyl-d14	62%		10-119%

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: TB113016PP1
Lab Sample ID: JC32660-3
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B67185.D	1	12/11/16	HT	n/a	n/a	V4B2763
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: TB113016PP1
Lab Sample ID: JC32660-3
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		76-120%
17060-07-0	1,2-Dichloroethane-D4	109%		73-122%
2037-26-5	Toluene-D8	100%		84-119%
460-00-4	4-Bromofluorobenzene	107%		78-117%

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

Client Sample ID: FB113016PP1
Lab Sample ID: JC32660-4
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E129060.D	1	12/14/16	JP	n/a	n/a	V2E5647
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: FB113016PP1
Lab Sample ID: JC32660-4
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		76-120%
17060-07-0	1,2-Dichloroethane-D4	98%		73-122%
2037-26-5	Toluene-D8	102%		84-119%
460-00-4	4-Bromofluorobenzene	106%		78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
124-38-9	Carbon dioxide	3.57	69	ug/l	JNB
	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

Client Sample ID: FB113016PP1
Lab Sample ID: JC32660-4
Matrix: AQ - Field Blank Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 11/30/16
Date Received: 12/01/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P19990.D	1	12/04/16	SG	12/02/16	OP98915A	E4P1083
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		24-125%
321-60-8	2-Fluorobiphenyl	56%		19-127%
1718-51-0	Terphenyl-d14	62%		10-119%

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

ACCUTEST LABORATORIES

GW
FB
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #5
Bottle Order Control #
Accutest Quote #
Accutest Job # JC32819

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Pat Prezorski Phone #: 516 287-6242

Project Information

Project Name: AGMNYM62235 // OU2 Monitoring Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.~~0216.GWMI3~~ 0412 NAVI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VC82602NG36GW+40	Cd, Cr (Total) 6010C	Cd, Cr (Dissolved, Field Filtered) 6010C	1,4-dioxane USEPA Method ~~522~~ 8270D							LAB USE ONLY
1	RE-121D1		12/2/16	1425	SN	GW	5	3				2				3			2							E39
2	TB120216PP2		12/2/16	1100	—	TB	2	2								2										V680
3	FB120216PP2		12/2/16	1130	DP	FB	5	3				2				3			2							
4	RE-121D2		12/2/16	1450	DP	GW	5	3				2				3			2							
5	REP120216PP2		12/2/16	—	—	GW	5	3				2				3			2							

Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)
- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT 2AJV
LABEL VERIFICATION JK

Data Deliverable Information
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions
RL reporting for metals
1,4 Dioxane - 8270D
OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	12/2/16 / 15:27	1 [signature] 12/2/16 / 15:27	2 [signature]	12/2/16 / 1845	2 [signature]
3		3	4		4
5		5	Custody Seal # 731,733	[x] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [x] Cooler Temp. 1.9°, 1.4° CFG

JC32819: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: RE-121D1
Lab Sample ID: JC32819-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A167337.D	1	12/15/16	VC	n/a	n/a	V1A7124
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	0.35	1.0	0.23	ug/l	J
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	0.25	1.0	0.21	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	1.9	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	1.1	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	7.8	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	0.35	1.0	0.22	ug/l	J
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: RE-121D1
Lab Sample ID: JC32819-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	25.8	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		76-120%
17060-07-0	1,2-Dichloroethane-D4	104%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	96%		78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
124-38-9	Carbon dioxide	3.98	310	ug/l	JNB
	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

Client Sample ID: RE-121D1
Lab Sample ID: JC32819-1
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P57163.D	1	12/12/16	AD	12/08/16	OP99039A	E3P2650
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	4.06	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	62%		24-125%
321-60-8	2-Fluorobiphenyl	67%		19-127%
1718-51-0	Terphenyl-d14	65%		10-119%

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: TB120216PP2
Lab Sample ID: JC32819-2
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman~~, OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A167335.D	1	12/15/16	VC	n/a	n/a	V1A7124
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: TB120216PP2
Lab Sample ID: JC32819-2
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		76-120%
17060-07-0	1,2-Dichloroethane-D4	106%		73-122%
2037-26-5	Toluene-D8	97%		84-119%
460-00-4	4-Bromofluorobenzene	98%		78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
124-38-9	Carbon dioxide	4.00	60	ug/l	JNB
	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

Client Sample ID: FB120216PP2
Lab Sample ID: JC32819-3
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C150538.D	1	12/16/16	JP	n/a	n/a	V1C6659
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	7.2	10	5.0	ug/l	J
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: FB120216PP2
Lab Sample ID: JC32819-3
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		76-120%
17060-07-0	1,2-Dichloroethane-D4	92%		73-122%
2037-26-5	Toluene-D8	95%		84-119%
460-00-4	4-Bromofluorobenzene	96%		78-117%

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

Client Sample ID: FB120216PP2
Lab Sample ID: JC32819-3
Matrix: AQ - Field Blank Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P57164.D	1	12/12/16	AD	12/08/16	OP99039A	E3P2650
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	62%		24-125%
321-60-8	2-Fluorobiphenyl	67%		19-127%
1718-51-0	Terphenyl-d14	72%		10-119%

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: RE-121D2
Lab Sample ID: JC32819-4
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A167338.D	1	12/15/16	VC	n/a	n/a	V1A7124
Run #2	L286553.D	20	12/16/16	XC	n/a	n/a	VL7958

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

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	3.4	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	1.7	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	0.69	1.0	0.21	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	3.4	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	2.1	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	15.4	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	0.34	1.0	0.23	ug/l	J
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	0.47	1.0	0.22	ug/l	J
79-00-5	1,1,2-Trichloroethane	0.59	1.0	0.28	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: RE-121D2
Lab Sample ID: JC32819-4
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	591 [a]	20	5.1	ug/l	D
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%	103%	76-120%
17060-07-0	1,2-Dichloroethane-D4	106%	103%	73-122%
2037-26-5	Toluene-D8	96%	101%	84-119%
460-00-4	4-Bromofluorobenzene	94%	103%	78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
124-38-9	Carbon dioxide	3.99	350	ug/l	JNB
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

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: RE-121D2
Lab Sample ID: JC32819-4
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P57165.D	1	12/12/16	AD	12/08/16	OP99039A	E3P2650
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.77	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	63%		24-125%
321-60-8	2-Fluorobiphenyl	69%		19-127%
1718-51-0	Terphenyl-d14	84%		10-119%

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: REP120216PP2
Lab Sample ID: JC32819-5
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A167374.D	1	12/16/16	VC	n/a	n/a	V1A7126
Run #2	1A167350.D	10	12/16/16	VC	n/a	n/a	V1A7125

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

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	3.2	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	1.6	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	0.67	1.0	0.21	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	3.2	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	2.1	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	14.9	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	0.33	1.0	0.23	ug/l	J
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	0.50	1.0	0.22	ug/l	J
79-00-5	1,1,2-Trichloroethane	0.55	1.0	0.28	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: REP120216PP2
Lab Sample ID: JC32819-5
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	630 [a]	10	2.6	ug/l	D
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%	105%	76-120%
17060-07-0	1,2-Dichloroethane-D4	101%	95%	73-122%
2037-26-5	Toluene-D8	98%	96%	84-119%
460-00-4	4-Bromofluorobenzene	96%	94%	78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	3.99	350	ug/l	JB
	Total TIC, Volatile		0	ug/l	

(a) Result is from Run# 2

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: REP120216PP2
Lab Sample ID: JC32819-5
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/02/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P57166.D	1	12/12/16	AD	12/08/16	OP99039A	E3P2650
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	2.56	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	60%		24-125%
321-60-8	2-Fluorobiphenyl	63%		19-127%
1718-51-0	Terphenyl-d14	79%		10-119%

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

ACCUTEST LABORATORIES

GW
FB
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #5 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC32820

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Pat Brezonik Phone #: 516 287-6217

Project Information

Project Name: AGMNYM62235 // OU2 Monitoring Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project # 0416. NAVI3 NY001496.~~0216.GWMI3~~
Client Purchase Order #:
Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VC82602NG36GW+40	Cd, Cr (Total) 6010C	Cd, Cr (Dissolved, Field Filtered) 6010C	1,4-dioxane USEPA Method ~~8260~~ 8270D								LAB USE ONLY
1	RE-114D3		12/1/16	1525	PB	GW	5	3				2				3			2								E8
2	TB120116PB2		12/1/16	1100	—	TB	2	2								2												V679
3	FB120116PB2		12/1/16	1120	PB	FB	5	3				2				3			2								

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

INITIAL ASESSMENT 2B DOM
LABEL VERIFICATION

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

RL reporting for metals
OU2 Hydro
1,4 dioxane - Method 8270D

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		12/1/16 1845	1	2	12/2/16 1855	12/2/16 1845
2						
3						
4						
5						

Custody Seal # 735 [x] Intact [ ] Not intact
Preserved where applicable [ ]
On Ice [x] Cooler Temp. 1.8°C

5.1 5

JC32820: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: RE-114D3
Lab Sample ID: JC32820-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B133043.D	1	12/15/16	VC	n/a	n/a	V3B5919
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	0.70	1.0	0.20	ug/l	J
156-59-2	cis-1,2-Dichloroethene	0.58	1.0	0.31	ug/l	J
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	9.9	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: RE-114D3
Lab Sample ID: JC32820-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	47.0	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		76-120%
17060-07-0	1,2-Dichloroethane-D4	103%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	96%		78-117%

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

Client Sample ID: RE-114D3
Lab Sample ID: JC32820-1
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67323.D	1	12/08/16	SG	12/07/16	OP99009A	E3M3128
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	1.52	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	88%		24-125%
321-60-8	2-Fluorobiphenyl	80%		19-127%
1718-51-0	Terphenyl-d14	75%		10-119%

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: TB120116PP1
Lab Sample ID: JC32820-2
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B133041.D	1	12/15/16	VC	n/a	n/a	V3B5919
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: TB120116PP1
Lab Sample ID: JC32820-2
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		76-120%
17060-07-0	1,2-Dichloroethane-D4	100%		73-122%
2037-26-5	Toluene-D8	98%		84-119%
460-00-4	4-Bromofluorobenzene	99%		78-117%

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

Client Sample ID: FB120116PP1
Lab Sample ID: JC32820-3
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B133042.D	1	12/15/16	VC	n/a	n/a	V3B5919
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: FB120116PP1
Lab Sample ID: JC32820-3
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		76-120%
17060-07-0	1,2-Dichloroethane-D4	103%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	97%		78-117%

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

Client Sample ID: FB120116PP1
Lab Sample ID: JC32820-3
Matrix: AQ - Field Blank Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/01/16
Date Received: 12/02/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67324.D	1	12/08/16	SG	12/07/16	OP99009A	E3M3128
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	91%		24-125%
321-60-8	2-Fluorobiphenyl	79%		19-127%
1718-51-0	Terphenyl-d14	105%		10-119%

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

ARCADIS Design & Consultancy for natural and built assets

Navy Wells -

Operable Unit 2

Data Review

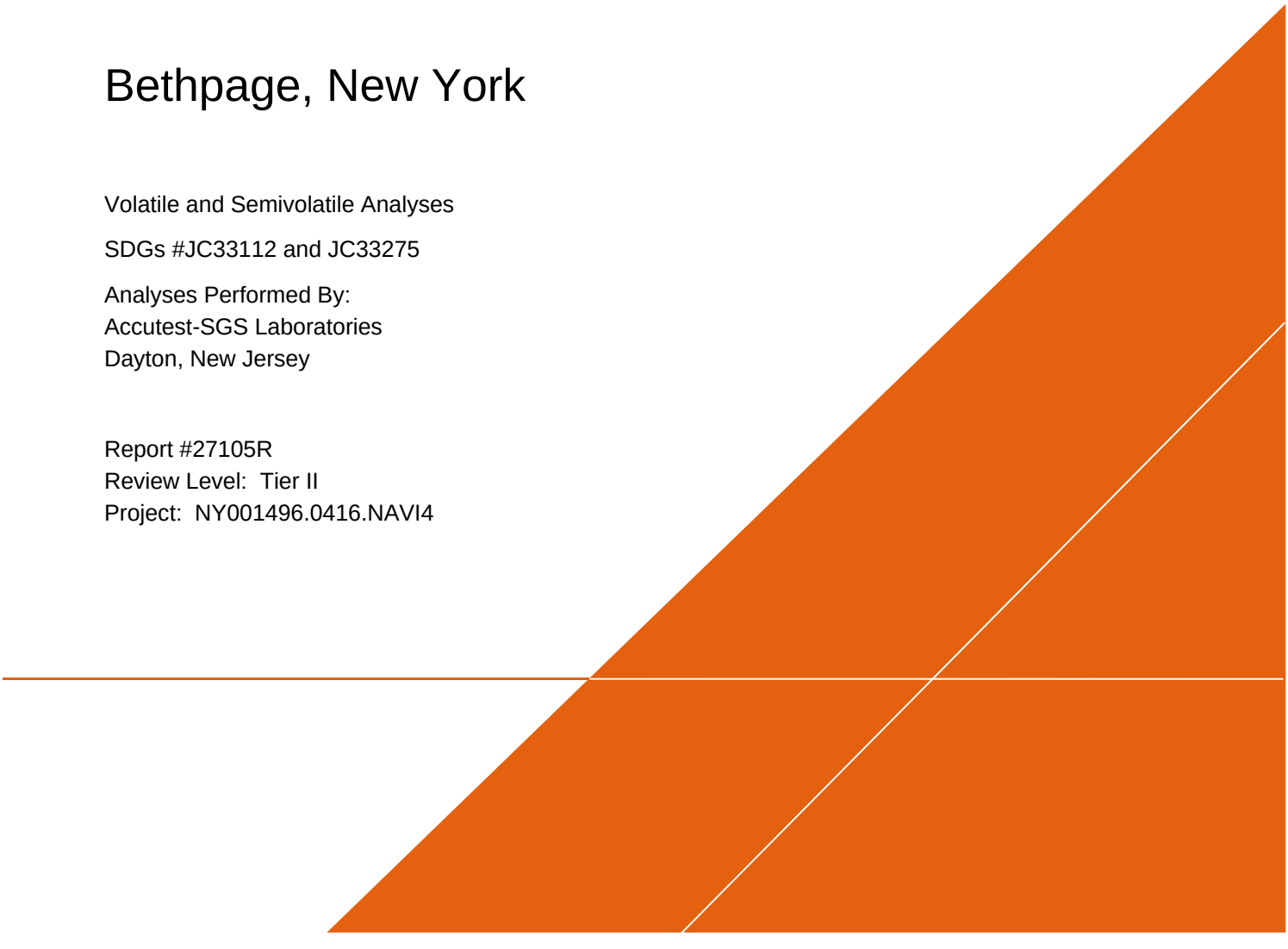
Bethpage, New York

Volatile and Semivolatile Analyses

SDGs #JC33112 and JC33275

Analyses Performed By:
Accutest-SGS Laboratories
Dayton, New Jersey

Report #27105R
Review Level: Tier II
Project: NY001496.0416.NAVI4



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) #JC33112 and JC33275 for samples collected in association with the ~~Northrop Grumman-Bethpage, NY Site~~ Navy Wells. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PCB	MET	MISC
JC33112	RE-107D1	JC33112-1	Water	12/6/2016		X	X			
	RE-107D2	JC33112-2	Water	12/6/2016		X	X			
	FB120616MD1	JC33112-3	Water	12/6/2016		X	X			
	TB120616MD1	JC33112-4	Water	12/6/2016		X				
JC33275	RE-107D3	JC33275-1	Water	12/7/2016		X	X			
	FB120716PP1	JC33275-2	Water	12/7/2016		X	X			
	TB120716PP1	JC33275-3	Water	12/7/2016		X				

Note:

1. SDG JC33112: Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed on sample location RE-107D2 for VOC and SVOC analyses.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) methods 8260C and 8270D-Selected Ion Monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUNDS (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

SDG JC33112: Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

In SDGs JC33275: Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries in SDG JC33112.

A MS/MSD was not performed on a sample location associated with SDG JC33275.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits in the SDGs.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either SDG.

7. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

The laboratory duplicate sample was not performed on a sample location associated with these SDGs.

8. System Performance and Overall Assessment

Tentatively identified compounds (TICs) were not detected in any of the sample locations.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260C	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X	X		
C. Trip blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

RPD Relative percent difference

%R Percent recovery

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 8270D-SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6°C

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

SDG JC33112: Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

In SDGs JC33275: Compounds were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries in SDG JC33112.

A MS/MSD was not performed on a sample location associated with SDG JC33275.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not collected with a sample location associated with either SDG.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

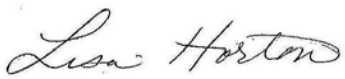
SVOCs: EPA 8270D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X	X		
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Lisa Horton

SIGNATURE: 

DATE: January 27, 2017

PEER REVIEW: Todd Church

DATE: January 30, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS

ACCUTEST LABORATORIES

GW
FB
WTB

CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #4 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC33112

Client / Reporting Information

Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com E-mail:
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Tony Reed / R Kleppel / Robert Phone #: 516-444-7061

Project Information

Project Name: AGMNYM62235 // OU2 Outpost Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0416.NAVI3
Client Purchase Order #:
Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)

Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V5242NG36GW+40	1,4-dioxane USEPA Method 8260C	VOCs 8260C 1,4 Dioxane 8270D	LAB USE ONLY
1	RE-107D1		12/6/16	1420	AK	GW	5	3				2						3 2	
2	RE-107D2		12/6/16	1440	MO	GW	13	9				6						9 6	E81
3	FB120616M01		12/6/16	1100	JR	FB	5	3				2						3 2	V734
4	TB120616M01		12/6/16	0900	—	TB	2	2										2	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ~~ASSESSMENT~~ 2ASM
LABEL ~~VERIFICATION~~ DS

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

RE-107D2 to be used as MS/MSD
OU2 Hydro

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 1730 12/6/16	Received By: 1 Chris Laird	12/7/16 11:40	Relinquished By: 2 Chris Laird	Date Time: 12/7/16 1700	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3		Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5		Custody Seal # 752, 754	Intact / Not intact	Preserved where applicable	On Ice	Cooler Temp. 2.3, 3.5 °C IP

JC33112: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: RE-107D1
Lab Sample ID: JC33112-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L286583.D	1	12/17/16	XC	n/a	n/a	VL7958
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	0.98	1.0	0.23	ug/l	J
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: RE-107D1
Lab Sample ID: JC33112-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	11.8	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		76-120%
17060-07-0	1,2-Dichloroethane-D4	107%		73-122%
2037-26-5	Toluene-D8	101%		84-119%
460-00-4	4-Bromofluorobenzene	106%		78-117%

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

(a) This compound in BS is outside in house QC limits bias high.

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: RE-107D1
Lab Sample ID: JC33112-1
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P65237.D	1	12/13/16	AD	12/10/16	OP99101A	E2P2859
Run #2	3M67438.D	1	12/13/16	JJ	12/10/16	OP99101A	E3M3134

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	5.01	1.0	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%	85%	24-125%
321-60-8	2-Fluorobiphenyl	70%	86%	19-127%
1718-51-0	Terphenyl-d14	86%	74%	10-119%

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: RE-107D2
Lab Sample ID: JC33112-2
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L286582.D	1	12/17/16	XC	n/a	n/a	VL7958
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	0.50	1.0	0.20	ug/l	J
156-59-2	cis-1,2-Dichloroethene	3.3	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	18.0	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	6.1	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: RE-107D2
Lab Sample ID: JC33112-2
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Navy Wells

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	174	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		76-120%
17060-07-0	1,2-Dichloroethane-D4	107%		73-122%
2037-26-5	Toluene-D8	100%		84-119%
460-00-4	4-Bromofluorobenzene	105%		78-117%

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

Client Sample ID: RE-107D2
Lab Sample ID: JC33112-2
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P65238.D	1	12/13/16	AD	12/10/16	OP99101A	E2P2859
Run #2	3M67439.D	1	12/13/16	JJ	12/10/16	OP99101A	E3M3134

	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2	960 ml	1.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	8.10	1.0	0.051	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	70%	84%	24-125%
321-60-8	2-Fluorobiphenyl	71%	89%	19-127%
1718-51-0	Terphenyl-d14	81%	70%	10-119%

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: FB120616MD1
Lab Sample ID: JC33112-3
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L286580.D	1	12/17/16	XC	n/a	n/a	VL7958
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID:	FB120616MD1		
Lab Sample ID:	JC33112-3	**Date Sampled:**	12/06/16
Matrix:	AQ - Field Blank Water	**Date Received:**	12/07/16
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY		

Navy Wells

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		76-120%
17060-07-0	1,2-Dichloroethane-D4	106%		73-122%
2037-26-5	Toluene-D8	103%		84-119%
460-00-4	4-Bromofluorobenzene	107%		78-117%

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

(a) This compound in BS is outside in house QC limits bias high.

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: FB120616MD1
Lab Sample ID: JC33112-3
Matrix: AQ - Field Blank Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3M67440.D	1	12/13/16	JJ	12/10/16	OP99101A	E3M3134
Run #2							

	Initial Volume	Final Volume
Run #1	960 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.051	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	75%		24-125%
321-60-8	2-Fluorobiphenyl	72%		19-127%
1718-51-0	Terphenyl-d14	81%		10-119%

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: TB120616MD1
Lab Sample ID: JC33112-4
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L286581.D	1	12/17/16	XC	n/a	n/a	VL7958
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: TB120616MD1
Lab Sample ID: JC33112-4
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/06/16
Date Received: 12/07/16
Percent Solids: n/a

Navy Wells

VOA OU2 GW List

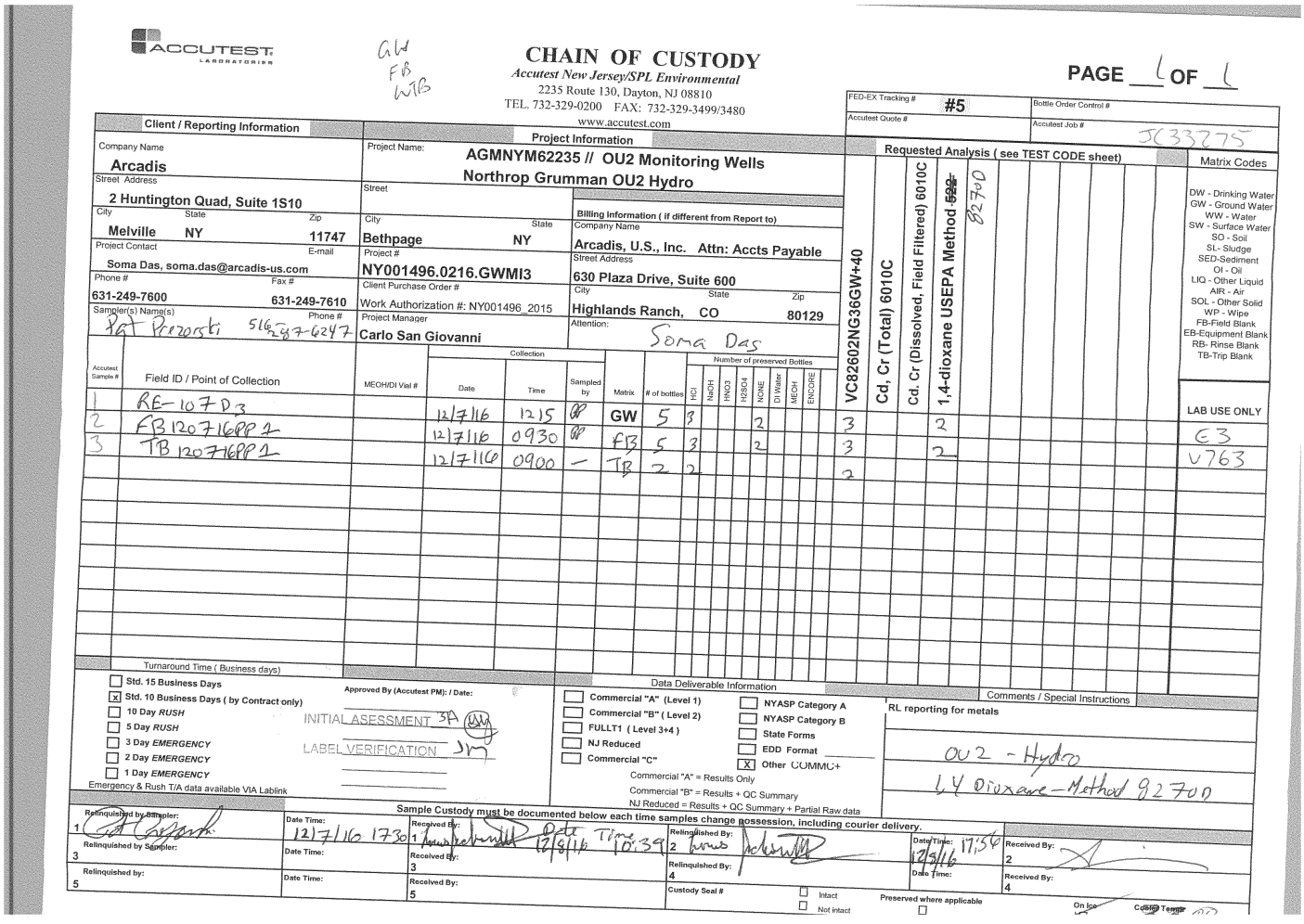
CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		76-120%
17060-07-0	1,2-Dichloroethane-D4	106%		73-122%
2037-26-5	Toluene-D8	101%		84-119%
460-00-4	4-Bromofluorobenzene	106%		78-117%

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

(a) This compound in BS is outside in house QC limits bias high.

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



ACCUTEST LABORATORIES

GW
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CHAIN OF CUSTODY

Accutest New Jersey/SPL Environmental
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # #5 | Bottle Order Control #
Accutest Quote # | Accutest Job # JC33275

Client / Reporting Information
Company Name: Arcadis
Street Address: 2 Huntington Quad, Suite 1S10
City: Melville State: NY Zip: 11747
Project Contact: Soma Das, soma.das@arcadis-us.com
Phone #: 631-249-7600 Fax #: 631-249-7610
Sampler(s) Name(s): Pat Prezorski Phone #: 516-287-6247

Project Information
Project Name: AGMNYM62235 // OU2 Monitoring Wells Northrop Grumman OU2 Hydro
Street:
City: Bethpage State: NY
Project #: NY001496.0216.GWMI3
Client Purchase Order #: Work Authorization #: NY001496_2015
Project Manager: Carlo San Giovanni

Billing Information (if different from Report to)
Company Name: Arcadis, U.S., Inc. Attn: Accts Payable
Street Address: 630 Plaza Drive, Suite 600
City: Highlands Ranch, State: CO Zip: 80129
Attention: Soma Das

Requested Analysis (see TEST CODE sheet)

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VC82602NG36GW+40	Cd, Cr (Total) 6010C	Cd, Cr (Dissolved, Field Filtered) 6010C	1,4-dioxane USEPA Method 8270D	Matrix Codes
1	RE-107D3		12/7/16	1215	SP	GW	5	3				2				3			2	LAB USE ONLY
2	FB120716PP2		12/7/16	0930	SP	FB	5	3				2				3			2	E3
3	TB120716PP2		12/7/16	0900	—	TB	2	2								2				V763

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)
- [ ] Std. 15 Business Days
- [x] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:
INITIAL ASESSMENT SA
LABEL VERIFICATION JM

Data Deliverable Information
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMC+

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions
RL reporting for metals
OU2 - Hydro
1,4 Dioxane - Method 8270D

Sample Custody must be documented below each time samples change possession, including courier delivery.

1 Relinquished by Sampler:	Date Time: 12/7/16 1730	Received By: 1	Date Time: 12/8/16 10:39	Relinquished By: 2	Date Time: 12/8/16 17:30	Received By: 2	
3 Relinquished by Sampler:	Date Time:	Received By: 3		Relinquished By: 4	Date Time:	Received By: 4	
5 Relinquished by:	Date Time:	Received By: 5		Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice Cooler Temp

JC33275: Chain of Custody
Page 1 of 2

Report of Analysis

Client Sample ID: RE-107D3
Lab Sample ID: JC33275-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E129177.D	1	12/20/16	JP	n/a	n/a	V2E5653
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	2.8	5.0	1.2	ug/l	J
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	0.24	1.0	0.23	ug/l	J
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: RE-107D3
Lab Sample ID: JC33275-1
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	0.26	1.0	0.26	ug/l	J
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		76-120%
17060-07-0	1,2-Dichloroethane-D4	102%		73-122%
2037-26-5	Toluene-D8	101%		84-119%
460-00-4	4-Bromofluorobenzene	103%		78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	3.57	250	ug/l	JB
	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

Client Sample ID: RE-107D3
Lab Sample ID: JC33275-1
Matrix: AQ - Ground Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P57329.D	1	12/17/16	SG	12/14/16	OP99210A	E3P2659
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	0.10	0.050	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	61%		24-125%
321-60-8	2-Fluorobiphenyl	59%		19-127%
1718-51-0	Terphenyl-d14	56%		10-119%

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: FB120716PP1
Lab Sample ID: JC33275-2
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U210783.D	1	12/21/16	GA	n/a	n/a	VU9656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	8.5	10	5.0	ug/l	J
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: FB120716PP1
Lab Sample ID: JC33275-2
Matrix: AQ - Field Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		76-120%
17060-07-0	1,2-Dichloroethane-D4	95%		73-122%
2037-26-5	Toluene-D8	100%		84-119%
460-00-4	4-Bromofluorobenzene	103%		78-117%

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

Client Sample ID: FB120716PP1
Lab Sample ID: JC33275-2
Matrix: AQ - Field Blank Water
Method: SW846 8270D BY SIM SW846 3510C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3P57330.D	1	12/17/16	SG	12/14/16	OP99210A	E3P2659
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	0.204	0.10	0.049	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	66%		24-125%
321-60-8	2-Fluorobiphenyl	66%		19-127%
1718-51-0	Terphenyl-d14	69%		10-119%

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: TB120716PP1
Lab Sample ID: JC33275-3
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

Navy Wells

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E129187.D	1	12/20/16	JP	n/a	n/a	V2E5653
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.14	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.55	ug/l	
75-25-2	Bromoform	ND	1.0	0.34	ug/l	
74-83-9	Bromomethane	ND	2.0	0.46	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	1.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.33	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.17	ug/l	
75-00-3	Chloroethane	ND	1.0	0.44	ug/l	
67-66-3	Chloroform	ND	1.0	0.23	ug/l	
74-87-3	Chloromethane	ND	1.0	0.96	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.23	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.39	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.31	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.36	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.33	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.19	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.26	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.27	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.39	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.22	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.28	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

Client Sample ID: TB120716PP1
Lab Sample ID: JC33275-3
Matrix: AQ - Trip Blank Water
Method: SW846 8260C
Project: ~~Northrop Grumman,~~ OU2 Hydro, Bethpage, NY
Navy Wells

Date Sampled: 12/07/16
Date Received: 12/08/16
Percent Solids: n/a

VOA OU2 GW List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethene	ND	1.0	0.26	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.33	ug/l	
	m,p-Xylene	ND	1.0	0.42	ug/l	
95-47-6	o-Xylene	ND	1.0	0.21	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		76-120%
17060-07-0	1,2-Dichloroethane-D4	104%		73-122%
2037-26-5	Toluene-D8	99%		84-119%
460-00-4	4-Bromofluorobenzene	102%		78-117%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	3.57	65	ug/l	JB
	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

Appendix D

ARCADIS Separate and Ongoing OU2 Monitoring of Navy Wells

Appendix D. Schedule of ARCADIS Ongoing OU2 Monitoring of Navy wells

Well	Well owner	1st Q	2nd Q	3rd Q	4th Q	VOC Analysis Method
Outpost wells						
BPOW1-1	Navy		X		X	524.2
BPOW1-2	Navy		X		X	524.2
BPOW1-3	Navy		X		X	524.2
BPOW1-4	Navy		X		X	524.2
BPOW1-5	Navy		X		X	524.2
BPOW1-6	Navy		X		X	524.2
BPOW2-1	Navy		X		X	524.2
BPOW2-2	Navy		X		X	524.2
BPOW2-3	Navy		X		X	524.2
BPOW3-1	Navy		X		X	524.2
BPOW3-2	Navy		X		X	524.2
BPOW3-3	Navy		X		X	524.2
BPOW3-4	Navy		X		X	524.2
BPOW4-1R	Navy		X		X	524.2
BPOW4-2R	Navy		X		X	524.2
Semi-annual and annual						
TT102D	Navy		X		X	8260C
TT102D2	Navy		X		X	8260C
FW-03	Navy		X			8260C
GM-15D	Navy		X		X	8260C
GM-15D2	Navy		X		X	8260C
GM-17D	Navy		X		X	8260C
GM-17I	Navy		X		X	8260C
GM-18D	Navy		X		X	8260C
GM-21D	Navy		X			8260C
GM-39DA	Navy		X		X	8260C
GM-39DB	Navy		X		X	8260C
GM-73D	Navy		X		X	8260C
GM-73D2	Navy		X		X	8260C
GM-74D	Navy		X		X	8260C
GM-74D2	Navy		X		X	8260C
GM-74I	Navy		X		X	8260C
GM-75D2	Navy		X		X	8260C
GM-78I	Navy		X			8260C
GM-78S	Navy		X			8260C
GM-79D	Navy		X		X	8260C
GM-79I	Navy		X		X	8260C
HN-24I	Navy		X			8260C
HN-40I	Navy		X			8260C
HN-40S	Navy		X			8260C
HN-42I	Navy		X			8260C
HN-42S	Navy		X			8260C

Q: Quarter
VOC: volatile organic compound