ARCADIS
Infrastructure, environment, buildings

ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631.249.7600
Fax 631.249.7610
www.arcadis-us.com

ENVIRONMENT

Mr. Steven Scharf, P.E.
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7015

Subject:
Results of First Quarter 2010 Groundwater Monitoring,
Operable Unit 2, Northrop Grumman Systems Corporation and Naval Weapons Industrial Reserve Plant (NWIRP) Sites, Bethpage, New York.
(NYSDEC Site #s 1-30-003A and B)

Date:
May 14, 2010

Contact:
David Stern

Phone:
631-391-5284

Email:
David.stern@arcadis-us.c

Our ref:
NY001496.0410.0004

Dear Mr. Scharf:

On behalf of Northrop Grumman Systems Corporation (Northrop Grumman), ARCADIS is providing the NYSDEC with the validated results of groundwater monitoring performed in accordance with the approved groundwater monitoring plan (ARCADIS G&M, Inc. 2006) and the Public Water Supply Contingency Plan (PWSCP) (ARCADIS G&M, Inc. 2003) for the First Quarter of 2010 for Operable Unit 2 (OU2). Table 1 provides OU2 remedial system performance operational data and water balance. Tables 2, 3, and 4 provide the analytical results of monitoring for this period. Figure 1 shows the site plan with well locations.

Please contact us if you have any questions or comments.

Sincerely,

ARCADIS of New York, Inc.

David E. Stern
Senior Hydrogeologist

Carlo San Giovanni
Project Manager

Enclosures

Copies:
See Attached Distribution List

Imagine the result

Copies:
John Cofman – Northrop Grumman
Kent Smith – Northrop Grumman
Walter Parish – NYSDEC Region 1
Bill Spitz - NYSDEC Region 1
Steven Karpinski – New York State Department of Health
Michael Alarcon – Nassau County Department of Health
Joseph DeFranco – Nassau County Department of Health
Lora Fly – NAVFAC Midlant Environmental
David Brayack – TetraTech NUS, Inc.
Richard Passmore – Glenn Springs Holdings, Inc.
Kevin Lumpe – Steel Equities
Thomas Taccone – USEPA
Matthew Russo – Town of Oyster Bay
Anthony J. Sabino
Frank Flood – Massapequa Water District
Joseph Trotta – Aqua New York
William Bier – South Farmingdale Water District
John Reinhardt – Town of Hempstead Water District
Michael Boufis – Bethpage Water District
Lois Lovisolo – Bethpage Public Library (Public Repository)
File

Table 1. Summary of Operational Data and Water Balance for the On-Site Portion of the OU2 Groundwater Remedy, First Quarter 2010, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York.

Identification	Design Pumping/ Recharge Rate [a] (gpm)	Current Actual Average Pumping/Recharge Rate [b] (gpm)	Design Total Pumpage/Recharge (MG)	Current Actual Total Pumpage/Recharge (MG)	Current Percent of Design Pumpage/ Recharge	Current TCE Concentration (ug/L)	Current TVOC Concentration [c] (ug/L)	1st Quarter 2010 Estimated VOC Mass Removed [d] (lbs)
Remedial Wells			**Groundwater Removed from Aquifer**					
Well 1	800	805	106.0	103.6	98%	360	462	399
Well 3	700	715	92.7	92.1	99%	2,200	2,469	1,894
Well 17	1,000	1,016	132.5	133.2	101%	200	237	263
Well 18	600	631	79.5	82.7	104%	91	113	78
Well 19	700	711	92.7	93.3	101%	190	225.9	176
Rounded Totals:	**3,800**	**3,878**	**503**	**505**	**100%**	**--**	**--**	**2,810**
Recharge Basins [a]			**Treated Water Recharged to Aquifer**					
West Recharge Basins	0	1,178	0	156.1	--	--	--	--
South Recharge Basins	2,231	2,556	295.6	338.6	115%	--	--	--
Rounded Totals:	**2,231**	**3,734**	**296**	**494.7**	**167%**	**--**	**--**	**--**
Treated Water Sent to Calpine								
Calpine Demand	100-400	140	14-56	18.5	--	--	--	--

Treatment Efficiencies	**Average SPDES Outfall TVOC Concentrations (ug/L) [f]**
Tower 96 System Efficiency [e] :	**>99.9%** **0.3**
Tower 102 System Efficiency [e] :	**>99.9%** **<0.5**

see footnotes on last page

Table 1. Summary of Operational Data and Water Balance for the On-Site Portion of the OU2 Groundwater Remedy, First Quarter 2010, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York.

(a) - Design remedial well pumping rates based on computer modeling (ARCADIS G& M, Inc. 2003c). Acceptable design recharge rates based on computer modeling (ARCADIS G&M, Inc. 2004b). Design pumping and recharge rates were modified in April, 2005. Recharge includes remedial well pumpage (minus Calpine demand, Oxy biosparge system demand, incidental irrigation use, and pipe loss), plus incidental runoff from precipitation. Current average recharge rates have been determined using the entire 92-day span of time as opposed to current average pumping rates, which account for varying amounts of downtime, as indicated below.

b) - OU2 wells were operational during the First Quarter 2010, at the following percentages: Well-1 (97.1%), Well-3 (97.2%); Well-17 (99%), Well-18 (99%), and Well-19 (99%). The Actual Average Pumping Rates and rate of treated water sent to Calpine are for when the wells are pumping.

(c) - The TVOC concentration for each well was calculated based on First Quarter 2010 groundwater monitoring data (Table 2).

(d) - TVOC mass removed is based on the TVOC data given above and the following formula:

(TVOC concentration in ug/L) X (gallons pumped) X (3.785 L/gal) X (1 x 10^{-6} g/ug) X (2.2 x 10^{-3} lb/g)

(e) Remedial System Efficiency calculated from values above and in Table 2 using the following formula:

$$1 - \left[\left(\frac{\text{Average SPDES TVOC Concentration at Outfall}}{\frac{[(\text{TVOC}_{\text{Well 1}} \text{ X } Q_{\text{Well 1}}) + (\text{TVOC}_{\text{Well 2}} \text{ X } Q_{\text{Well 2}}) \text{ etc...}]}{(Q_{\text{Well 1}} + Q_{\text{Well 2}} \text{ etc..})}} \right) \right]$$

-When non-detectable levels of VOCs are found in the effluent, a value of zero is used to estimate the efficiency of the air stripper.

(f) -Towers 102 and 96 outfalls are identified as Outfalls 005 and 006, respectively (commonly known as the South Recharge Basins and Plant 5 Recharge Basins, respectively). Complete SPDES reporting provided to NYSDEC by NGC under separate cover.

--	Not Available or Not Applicable	lb/g	pounds per gram
TVOC	Total Volatile Organic Compounds	lbs	pounds
g/ug	grams per microgram	MG	Million Gallons
gpm	gallons per minute	ug/L	micrograms per liter
L/gal	Liters per gallon	OU2	Operable Unit 2
SPDES	State Pollutant Discharge Elimination System	Q	Pumping Rate
NGC	Northrop Grumman Corporation	NYSDEC	New York State Department of Environmental Conservation

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	N-10624 / N-10624 / 2/3/2010	N-10627 / N-10627 / 2/2/2010	N-10631 / N-10631 / 2/2/2010	FW-03 / FW-03 / 1/29/2010	GM-13D / GM-13D / 2/9/2010	GM-15I / GM-15I / 2/24/2010	GM-15S / GM-15S / 2/1/2010	GM-15D / GM-15D / 1/21/2010
1,1,1-Trichloroethane		< 5	< 5	< 5	**0.28 J**	**4.1 J**	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	< 5	**6 J**	< 5	< 5	< 5
1,1-Dichloroethene		< 5	< 5	< 5	< 5	**13**	< 5	< 5	< 5
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
2-Butanone		< 50	< 50	< 50	< 50	< 100	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 100	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 100	< 50	< 50	< 50
Acetone		< 50	< 50	< 50	< 50	< 100	< 50	< 50	< 50
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 1.4	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 5	< 5	< 5	**2.9 J**	**35**	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	< 5	< 5	**0.62 J**	**27**	< 5	**0.58 J**	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Tetrachloroethene		< 5	< 5	< 5	**58**	**240**	< 5	< 5	**0.52 J**
Toluene		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Trichloroethylene		< 5	**0.77 J**	< 5	**2.5 J**	**82**	**3.2 J**	**7.4**	**0.93 J**
Trichlorotrifluoroethane (Freon 113)		< 5	< 5	< 5	< 5	**3.2 J**	< 5	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 2	< 4	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5
	Total VOC	0	**0.77**	0	**61.4**	**378.2**	**38.2**	**7.98**	**1.45**

Bold Constituent detected
VOCs Volatile Organic Compounds
ug/L Micrograms per liter
J Constituent value is estimated
D Constituent identified at a secondary dilution

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-15D2 / GM-15D2 / 1/21/2010	GM-17I / GM-17I / 2/16/2010	GM-17D / GM-17D / 2/17/2010	GM-18I / GM-18I / 2/9/2010	GM-18D / GM-18D / 2/17/2010	GM-20I / GM-20I / 2/12/2010	GM-20D / GM-20D / 2/12/2010	GM-21S / GM-21S / 1/29/2010
1,1,1-Trichloroethane		< 5	< 5	< 5	< 5	**0.35 J**	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene		**0.9 J**	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5	**0.43 J**	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		**1.1 J**	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	< 5	**0.58 J**	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		**0.32 J**	< 5	< 5	< 5	**0.96 J**	< 5	< 5	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		**10**	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Toluene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		**10**	**0.45 J**	**0.49 J**	**0.43 J**	**3.2 J**	< 5	< 5	< 5
Trichlorotrifluoroethane (Freon 113)		**1.2 J**	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Total VOC	**23.52**	**0.45**	**0.49**	**0.43**	**5.52**	0	0	0

Bold Constituent detected
VOCs Volatile Organic Compounds
ug/L Micrograms per liter
J Constituent value is estimated
D Constituent identified at a secondary dilution

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-21I / GM-21I / 2/11/2010	GM-21D / GM-21D / 2/8/2010	GM-33D2 / GM-33D2 / 2/2/2010	GM-34D / GM-34D / 2/5/2010	GM-34D2 / GM-34D2 / 2/5/2010	GM-35D2 / GM-35D2 / 2/3/2010	GM-36D / GM-36D / 2/9/2010	GM-36D2 / GM-36D2 / 2/9/2010
1,1,1-Trichloroethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
1,1-Dichloroethene		< 5	< 5	< 5	**7.8 J**	**1.7 J**	**0.51 J**	< 5	**0.53 J**
1,2-Dichloroethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
2-Butanone		< 50	< 50	< 50	< 250	< 100	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 250	< 100	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 250	< 100	< 50	< 50	< 50
Acetone		< 50	< 50 B	< 50	< 250 B	< 100 B	< 50	< 50	< 50
Benzene		< 0.7	< 0.7	< 0.7	< 3.5	< 1.4	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 5	< 5	< 25	< 10	**0.51 J**	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	< 5	**0.44 J**	**7.9 J**	**6.3 J**	**1.5 J**	< 5	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Tetrachloroethene		< 5	< 5	**9.7**	**5.8 J**	**9.8 J**	**8.8**	< 5	< 5
Toluene		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Trichloroethylene		< 5	**0.89 J**	**35**	**510**	**300**	**170 D**	**1.2 J**	**1.3 J**
Trichlorotrifluoroethane (Freon 113)		< 5	< 5	**16**	**10 J**	**3.8 J**	**3.4 J**	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 10	< 4	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 25	< 10	< 5	< 5	< 5
	Total VOC	0	**0.89**	**61.14**	**541.5**	**321.6**	**184.72**	**1.2**	**1.83**

Bold Constituent detected
VOCs Volatile Organic Compounds
ug/L Micrograms per liter
J Constituent value is estimated
D Constituent identified at a secondary dilution

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-37D GM-37D 2/15/2010	GM-37D2 GM-37D2 2/15/2010	GM-38D GM-38D 2/4/2010	GM-38D2 GM-38D2 2/4/2010	GM-39D$_A$ GM-39D$_A$ 1/29/2010	GM-39D$_B$ GM-39D$_B$ 1/29/2010	GM-70D2 GM-70D2 2/16/2010	GM-71D2 GM-71D2 2/3/2010
1,1,1-Trichloroethane		< 5	**1.2 J**	**2.7 J**	**1.3 J**	< 5	< 5	< 5	**1.9 J**
1,1,2,2-Tetrachloroethane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	**3.3 J**	**6 J**	**1.1 J**	< 5	< 5	< 5	**5.8**
1,1-Dichloroethene		< 5	**1.3 J**	**4.5 J**	**2.3 J**	< 5	< 5	< 5	**2.7 J**
1,2-Dichloroethane		< 5	< 5	**1.6 J**	< 13	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
2-Butanone		< 50	< 50	< 250	< 130	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 250	< 130	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 250	< 130	< 50	< 50	< 50	< 50
Acetone		< 50	< 50	< 250 B	< 130 B	< 50	< 50	< 50	< 50
Benzene		< 0.7	< 0.7	< 3.5	< 1.8	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 25	< 13	< 5	< 5	< 5	**0.68 J**
Chlorobenzene		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Chloroform		**0.32 J**	**0.39 J**	< 25	< 13	< 5	< 5	< 5	**0.91 J**
Chloromethane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	**0.32 J**	**1.8 J**	**4.5 J**	< 5	< 5	< 5	**0.97 J**
cis-1,3-dichloropropene		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Tetrachloroethene		**0.53 J**	**0.56 J**	**10 J**	< 13	< 5	< 5	**4.5 J**	< 5
Toluene		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Trichloroethylene		< 5	**2.7 J**	**870**	**370**	**10**	**34**	**23**	**10**
Trichlorotrifluoroethane (Freon 113)		< 5	< 5	< 25	**1.5 J**	< 5	< 5	**0.8 J**	< 5
Vinyl Chloride		< 2	< 2	< 10	< 5	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 25	< 13	< 5	< 5	< 5	< 5
	Total VOC	**0.85**	**9.77**	**896.6**	**380.7**	**10**	**34**	**28.3**	**22.96**

Bold Constituent detected
VOCs Volatile Organic Compounds
ug/L Micrograms per liter
J Constituent value is estimated
D Constituent identified at a secondary dilution

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

	Well:	GM-73D	GM-73D2	GM-74I	GM-74D	GM-74D2	GM-75D2	GM-78S	GM-78I
CONSTITUENT	**Sample ID:**	GM-73D	GM-73D2	GM-74I	GM-74D	GM-74D2	GM-75D2	GM-78S	GM-78I
(Units in ug/L)	**Date:**	1/28/2010	1/28/2010	1/28/2010	1/28/2010	1/28/2010	2/3/2010	1/29/2010	1/29/2010
1,1,1-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	**0.35 J**	< 5	< 5	**0.4 J**	< 5	< 5	< 5
1,1-Dichloroethene		< 5	**0.51 J**	< 5	< 5	**0.63 J**	**0.51 J**	< 5	< 5
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 5	< 5	< 5	**0.52 J**	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	< 5	**0.24 J**	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	**0.5 J**	< 5	< 5	**0.22 J**	**0.21 J**	< 5	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		< 5	**0.54 J**	< 5	**0.43 J**	**5.9**	**2.3 J**	< 5	< 5
Toluene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		**3.3 J**	**47**	< 5	**2.6 J**	**6.4**	**82**	**0.28 J**	< 5
Trichlorotrifluoroethane (Freon 113)		< 5	< 5	< 5	< 5	**0.61 J**	**0.57 J**	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Total VOC	**3.3**	**48.9**	0	**3.03**	**14.92**	**85.59**	**0.28**	0

Bold	Constituent detected
VOCs	Volatile Organic Compounds
ug/L	Micrograms per liter
J	Constituent value is estimated
D	Constituent identified at a secondary dilution

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

	Well:	GM-79I	GM-79D	HN-40S	HN-40I	HN-42S	HN-42I	WELL 1	WELL 3
CONSTITUENT	**Sample ID:**	GM-79I	GM-79D	HN-40S	HN-40I	HN-42S	HN-42I	WELL 1	WELL 3
(Units in ug/L)	**Date:**	1/22/2010	1/22/2010	1/28/2010	1/28/2010	1/28/2010	1/28/2010	2/1/2010	2/1/2010
1,1,1-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
1,1-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	**0.93 J**	< 100
1,1-Dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	**1.7 J**	**9.2 J**
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	**4.8 J**	< 100
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 130	< 1000
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 130	< 1000
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 130	< 1000
Acetone		< 50	< 50	< 50	< 50	< 50	< 50	< 130	< 1000
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 1.8	< 14
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Carbon Disulfide		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Chlorodifluoromethane (Freon 22)		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Chloroform		< 5	< 5	**0.62 J**	**0.43 J**	< 5	< 5	< 13	< 100
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
cis-1,2-dichloroethene		< 5	**0.37 J**	< 5	< 5	< 5	**4.7 J**	**4.4 J**	**15 J**
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Dichlorodifluoromethane (Freon 12)		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Tetrachloroethene		< 5	**0.78 J**	< 5	**0.3 J**	< 5	**0.3 J**	**86**	**65 J**
Toluene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Trichloroethylene		< 5	**37**	< 5	< 5	< 5	**12**	**360**	**2200**
Trichlorotrifluoroethane (Freon 113)		< 5	**0.55 J**	< 5	< 5	< 5	< 5	**4.2 J**	< 100
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 5	**180**
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
	Total VOC	0	**38.7**	**0.62**	**0.73**	0	**17**	**462.03**	**2469.2**

Bold Constituent detected
VOCs Volatile Organic Compounds
ug/L Micrograms per liter
J Constituent value is estimated
D Constituent identified at a secondary dilution

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	TOWER 96 EFFLUENT / TOWER 96 EFFLUENT / 2/1/2010	WELL 17 / WELL 17 / 2/1/2010	WELL 18 / WELL 18 / 2/1/2010	WELL 19 / WELL 19 / 2/1/2010	TOWER 102 EFFLUENT / TOWER 102 EFFLUENT / 2/1/2010
1,1,1-Trichloroethane		< 5	< 10	**1.4 J**	**0.69 J**	< 5
1,1,2,2-Tetrachloroethane		< 5	< 10	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 10	< 5	< 5	< 5
1,1-Dichloroethane		< 5	**1 J**	**1.2 J**	**0.98 J**	< 5
1,1-Dichloroethene		< 5	**2.1 J**	**4.3 J**	**1.6 J**	< 5
1,2-Dichloroethane		< 5	< 10	< 5	**0.58 J**	< 5
1,2-Dichloropropane		< 5	< 10	< 5	< 5	< 5
2-Butanone		< 50	< 100	< 50	< 50	< 50
2-Hexanone		< 50	< 100	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 100	< 50	< 50	< 50
Acetone		< 50	< 100	< 50	< 50	< 50
Benzene		< 0.7	< 1.4	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 10	< 5	< 5	< 5
Bromoform		< 5	< 10	< 5	< 5	< 5
Bromomethane		< 5	< 10	< 5	< 5	< 5
Carbon Disulfide		< 5	< 10	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 10	< 5	< 5	< 5
Chlorobenzene		< 5	< 10	< 5	< 5	< 5
Chlorodifluoromethane (Freon 22)		< 5	< 10	**0.4 J**	**0.47 J**	< 5
Chloroethane		< 5	< 10	< 5	< 5	< 5
Chloroform		< 5	< 10	**0.27 J**	**0.73 J**	< 5
Chloromethane		< 5	< 10	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	**3.8 J**	**1.9 J**	**22**	**0.34 J**
cis-1,3-dichloropropene		< 5	< 10	< 5	< 5	< 5
Dibromochloromethane		< 5	< 10	< 5	< 5	< 5
Dichlorodifluoromethane (Freon 12)		< 5	< 10	< 5	< 5	< 5
Ethylbenzene		< 5	< 10	< 5	< 5	< 5
Methylene Chloride		< 5	< 10	< 5	< 5	< 5
Styrene		< 5	< 10	< 5	< 5	< 5
Tetrachloroethene		< 5	**22**	**11**	**7.3**	< 5
Toluene		< 5	< 10	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 10	< 5	**0.58 J**	< 5
trans-1,3-dichloropropene		< 5	< 10	< 5	< 5	< 5
Trichloroethylene		**1.8 J**	**200**	**91**	**190**	**1 J**
Trichlorotrifluoroethane (Freon 113)		< 5	**7.8 J**	**1.7 J**	**0.93 J**	< 5
Vinyl Chloride		< 2	< 4	< 2	< 2	< 2
Xylene-o		< 5	< 10	< 5	< 5	< 5
Xylenes - m,p		< 5	< 10	< 5	< 5	< 5
	Total VOC	**1.8**	**236.7**	**113.17**	**225.86**	**1.34**

Bold Constituent detected
VOCs Volatile Organic Compounds
ug/L Micrograms per liter
J Constituent value is estimated
D Constituent identified at a secondary dilution

ARCADIS

Table 3. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Monitoring Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in mg/L)	Well: / Sample ID: / Date:	GM-15S / GM-15S / 2/1/2010	GM-78I / GM-78I / 1/29/2010	GM-78S / GM-78S / 1/29/2010	MW-01GF / MW-01GF / 2/3/2010	MW-02GF / MW-02GF / 2/1/2010	N-10631 / N-10631 / 2/2/2010	PT1 MW-04 / PT1 MW-04 / 2/1/2010	PT1 MW-05 / PT1 MW-05 / 2/1/2010	PT1 MW-06 / PT1 MW-06 / 2/1/2010
Cadmium		--	< 5	< 5	< 5	< 5	< 5	--	--	--
Cadmium (Dissolved)		--	< 5	< 5	< 5	< 5	< 5	--	--	--
Chromium		**561**	< 10	< 10	< 10	**31**	**33**	< 10	**399**	**275**
Chromium (Dissolved)		--	< 10	< 10	< 10	**27**	**18**	--	--	--

mg/L Milligrams per lite

Bold Constituent detected above IDL.

-- Not analyzed

ARCADIS

Table 4. Concentrations of Site-Related Volatile Organic Compounds Detected in Outpost Wells, First Quarter 2010, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	BPOW 1-1[3] / BPOW 1-1 / 1/21/2010	BPOW 1-2[3] / BPOW 1-2 / 1/21/2010	BPOW 1-3[3] / BPOW 1-3 / 1/22/2010	BPOW 3-1 / BPOW 3-1 / 1/26/2010	BPOW 3-2 / BPOW 3-2 / 1/22/2010	BPOW 4-1 / BPOW 4-1 / 1/25/2010	BPOW 4-2 / BPOW 4-2 / 1/27/2010	BPOW 4-3* / BPOW 4-3* / 1/27/2010
1,1,1-Trichloroethane		**0.91**	< 0.5	**3**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane		**0.31 J**	< 0.5	**1.4**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene		**0.57**	< 0.5	**2.3**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorotrifluoroethane (Freon 113)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.87**	**0.44 J**	**0.48 J**
Tetrachloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene		**1.4**	< 0.5	**0.86**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Site-Related VOCs [1] :		**3.19**	0	**7.56**	0	0	**0.87**	**0.44**	**0.48**
TVOC Trigger Value [2]:		**0.6**	**0.6**	**0.6**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**

Note: Outpost wells OW2-1 and OW2-2 were not sampled by Northrop Grumman this round, due to ongoing NYSDEC investigation of non-site related VOCs (benzene and methyl tertiary butyl ether) detected in these wells.

(1) Site-related VOCs were established in the Public Water Supply Contingency Plan (PWSCP) (ARCADIS G&M, Inc. 2003).

(2) TVOC Trigger Values were established in the PWSCP (ARCADIS G&M, Inc. 2003).

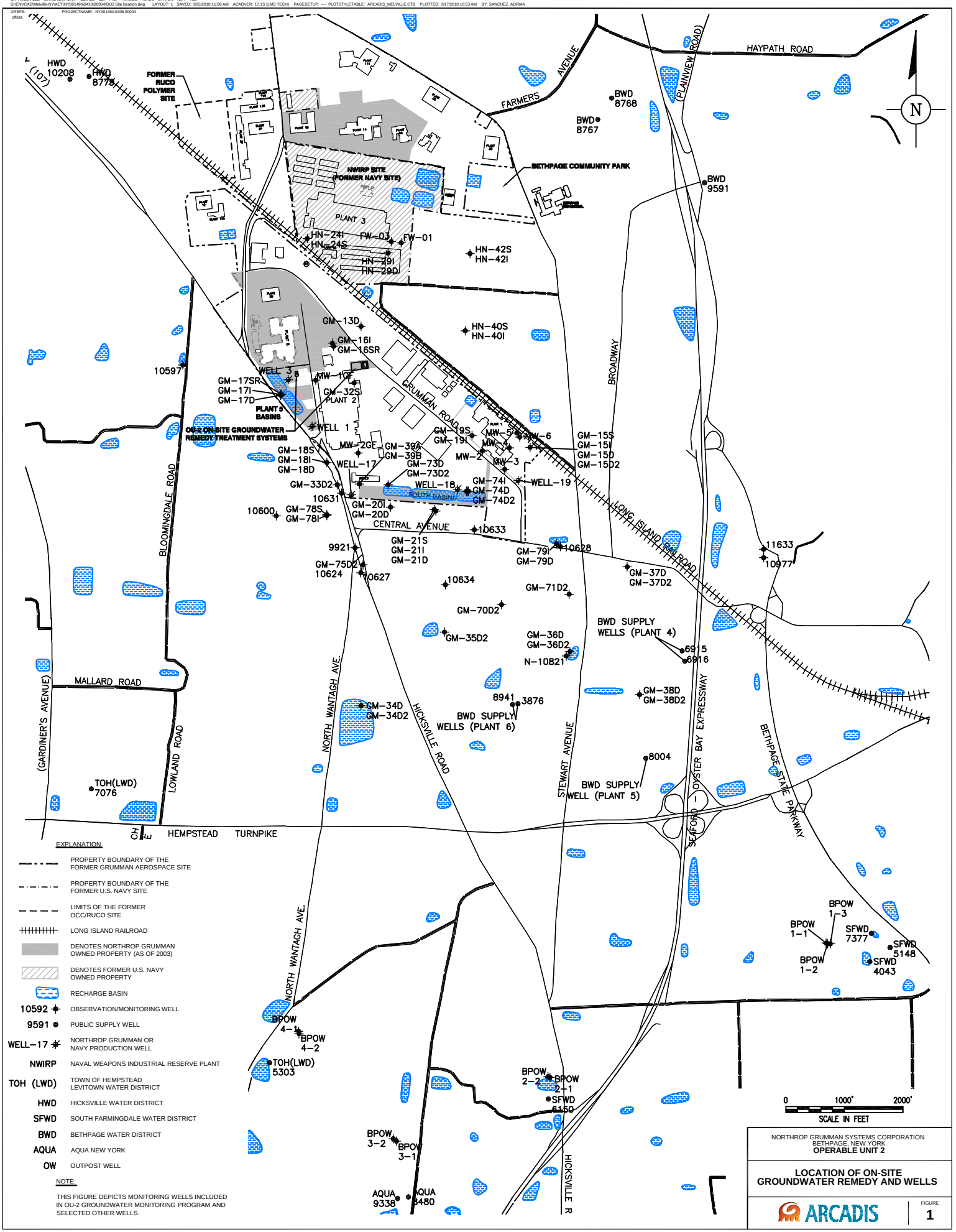
(3) The TVOC Trigger Value for Cluster 1 was initially exceeded on April 23, 2004; confirmatory sampling and reporting was conducted as per the 2003). PWSCP (ARCADIS G&M, Inc.)

* Replicate Sample

ug/L Micrograms per liter

Bold Constituent detected

TVOC Total Volatile Organic Compounds



EXPLANATION

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
- LIMITS OF THE FORMER OCC/RUCO SITE
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2003)
- DENOTES FORMER U.S. NAVY OWNED PROPERTY
- RECHARGE BASIN
- 10592 — OBSERVATION/MONITORING WELL
- 9591 — PUBLIC SUPPLY WELL
- WELL-17 — NORTHROP GRUMMAN OR NAVY PRODUCTION WELL
- NWIRP — NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- TOH (LWD) — TOWN OF HEMPSTEAD LEVITOWN WATER DISTRICT
- HWD — HICKSVILLE WATER DISTRICT
- SFWD — SOUTH FARMINGDALE WATER DISTRICT
- BWD — BETHPAGE WATER DISTRICT
- AQUA — AQUA NEW YORK
- OW — OUTPOST WELL

NOTE:

THIS FIGURE DEPICTS MONITORING WELLS INCLUDED IN OU-2 GROUNDWATER MONITORING PROGRAM AND SELECTED OTHER WELLS.

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK
OPERABLE UNIT 2

LOCATION OF ON-SITE GROUNDWATER REMEDY AND WELLS

ARCADIS

FIGURE 1