



Infrastructure, environment, facilities

Mr. Steven Scharf, P.E.  
New York State Department of Environmental Conservation (NYSDEC)  
Division of Environmental Remediation  
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Subject:  
Results of Fourth Quarter 2006 Groundwater Monitoring,  
Operable Unit 2,  
Northrop Grumman Systems Corporation, Bethpage, New York.  
(NYSDEC Site # 1-30-003A)

ENVIRONMENT

Dear Mr. Scharf:

Date:  
April 12, 2007

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 Geraghty & Miller, Inc. 2001; ARCADIS G&M, Inc. 2004; 2006) for the Fourth Quarter of 2006 for Operable Unit 2. Table 1 provide the complete results of monitoring for volatile organic compounds (VOCs) for this period. Figure 1 shows the site plan with well locations.

Contact:  
David E. Stern

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dstern@arcadis-us.com

Please contact us if you have any questions or comments.

Our ref:  
NY001464.0407.00004

Sincerely,

ARCADIS of New York, Inc.

David E. Stern  
Senior Scientist

Carlo San Giovanni  
Project Manager

Enclosures

Copies:  
See Attached Distribution List

Imagine the result

# ARCADIS

Steven Scharf, P.E.  
April 12, 2007

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# ARCADIS

Table 1. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2006, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	WELL:	GM-20I	GM-20D	GM-21I	GM-21D	GM-33D2	GM-33D2	GM-34D
	SAMPLE ID:	GM-20I	GM-20D	GM-21I	GM-21D	GM-33D-2	REP-11-29-06	GM-34D
	DATE:	11/21/2006	11/21/2006	11/20/2006	11/20/2006	11/29/2006	11/29/2006	11/30/2006
Chloromethane	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	<2	<2	<2	<2	<2	<2	<2	<2
Chloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Methylene chloride	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	<10	<10	<10	<10	<10	<10	<10	<10
Carbon disulfide	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<b>1J</b>	<b>0.94J</b>		<b>19</b>
1,1-Dichloroethane	<5	<5	<5	<5	<5	<5		<b>1.5J</b>
cis-1,2-Dichloroethene	<5	<5	<5	<5	<b>1.9J</b>	<b>1.9J</b>		<b>12</b>
trans-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5		<5
Chloroform	<5	<5	<5	<5	<5	<5		<b>0.65J</b>
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5		<5
2-Butanone	<10	<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<b>2J</b>	<b>120J</b>	<b>120J</b>		<b>1100D</b>
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	<10	<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene	<5	<5	<5	<5	<b>22B</b>	<b>24B</b>		<b>15B</b>
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<b>0.62J</b>	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5	<5
Xylene (total)	<b>2.7J</b>	<5	<b>1.1J</b>	<5	<5	<5	<5	<5
Vinyl Acetate	<5	<5	<5	<5	<5	<5	<5	<5
Freon 113	<5	<5	<5	<5	<b>69</b>	<b>70</b>		<b>22</b>
Chlorodifluoromethane	<5	<5	<5	<5	<5	<5		<b>1.3J</b>
Dichlorodifluoromethane	<5	<5	<5	<5	<5	<5		<b>0.57J</b>
<b>Total VOCs</b>	<b>3.32</b>	<b>0</b>	<b>1.1</b>	<b>2</b>	<b>213.9</b>	<b>216.84</b>		<b>1172.02</b>

ug/L Micrograms per liter  
 B Detected in an associated blank.  
 D Constituent identified at a secondary dilution.  
 J Estimated value  
**Bold** Constituent detected

# ARCADIS

Table 1. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2006, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	WELL:	GM-35D2	GM-75D2	GM-79I	GM-79D	WELL 1	WELL 3	WELL 17
	SAMPLE ID:	GM-35D-2	GM-75D-2	GM-79I	GM-79D	WELL1	WELL3	WELL17
	DATE:	11/29/2006	11/27/2006	11/21/2006	11/21/2006	12/14/2006	12/14/2006	12/15/2006
Chloromethane	<5	<5	<5	<5	<5	<5	<5	<5
Bromomethane	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	<2	<2	<2	<2	<2	<b>160</b>	<2	<2
Chloroethane	<5	<5	<5	<5	<5	<b>4.3J</b>	<5	<5
Methylene chloride	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	<10	<10	<10	<10	<10	<10	<10	<10
Carbon disulfide	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	<b>1.9J</b>	<b>7.5</b>	<5	<5	<b>4.6J</b>	<b>21</b>	<b>2.7J</b>	<5
1,1-Dichloroethane	<5	<5	<5	<5	<b>1.8J</b>	<b>3.9J</b>	<5	<5
cis-1,2-Dichloroethene	<b>3.5J</b>	<b>1.6J</b>	<5	<5	<b>8.6</b>	<b>17</b>	<b>3.7J</b>	<5
trans-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5	<b>0.5J</b>	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5
2-Butanone	<10	<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	<5	<5	<5	<5	<5	<200	<b>0.53J</b>	<5
Carbon tetrachloride	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<b>1.5J</b>	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<b>310DJ</b>	<b>380DJ</b>	<5	<b>47</b>	<b>540D</b>	<b>3200D</b>	<b>410D</b>	<5
Dibromochloromethane	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<b>210</b>	<5	<5
Benzene	<0.7	<0.7	<0.7	<0.7	<0.7	<b>53</b>	<0.7	<0.7
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	<10	<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene	<b>12B</b>	<b>9.8B</b>	<5	<b>1.4J</b>	<b>140</b>	<b>60</b>	<b>24</b>	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5	<5	<5	<5
Xylene (total)	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	<5	<5	<5	<5	<5	<5	<5	<5
Freon 113	<b>6.6</b>	<b>3.3J</b>	<5	<b>0.68J</b>	<b>8.2</b>	<b>22</b>	<b>10</b>	<5
Chlorodifluoromethane	<b>1.1J</b>	<5	<5	<5	<b>0.38J</b>	<5	<5	<5
Dichlorodifluoromethane	<5	<5	<5	<5	<5	<5	<5	<5
<b>Total VOCs</b>	<b>335.1</b>	<b>402.2</b>	<b>0</b>	<b>49.08</b>	<b>705.08</b>	<b>3751.7</b>	<b>450.93</b>	

ug/L Micrograms per liter  
 B Detected in an associated blank.  
 D Constituent identified at a secondary dilution.  
 J Estimated value  
**Bold** Constituent detected

# ARCADIS

Table 1. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2006, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	WELL:	WELL 18	WELL 19	T-102-INFL	T-102-EFFL	T-96-INFL	T-96-EFFL	TRIP BLANK
	SAMPLE ID:	WELL18	WELL19	T102INF	T102EFF	T96INF	T96EFF	TB-11-20-06
	DATE:	12/15/2006	12/15/2006	12/15/2006	12/15/2006	12/14/2006	12/14/2006	11/20/2006
Chloromethane		<5	<5	<5	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5	<5
Vinyl chloride		<2	<2	<2	<2	<b>76</b>	<2	<2
Chloroethane		<5	<5	<5	<5	<b>2J</b>	<5	<5
Methylene chloride		<5	<5	<5	<5	<5	<5	<b>3.8JB</b>
Acetone		<10	<10	<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<b>4.6J</b>	<b>1.5J</b>	<b>2.3J</b>	<5	<b>12</b>	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<b>2.9J</b>	<5	<5
cis-1,2-Dichloroethene		<b>1.7J</b>	<b>22</b>	<b>8.8</b>	<5	<b>12</b>	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5	<5
Chloroform		<5	<b>0.94J</b>	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<b>0.77J</b>	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5	<5
Trichloroethene		<b>140</b>	<b>180</b>	<b>270D</b>	<b>1.7J</b>	<b>2000D</b>	<b>1.4J</b>	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<b>10</b>	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene		<b>10</b>	<b>9.6</b>	<b>17</b>	<5	<b>100</b>	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5	<5
Freon 113		<b>1.6J</b>	<b>0.9J</b>	<b>5.6</b>	<5	<b>14</b>	<5	<5
Chlorodifluoromethane		<b>0.37J</b>	<b>0.29J</b>	<b>0.26J</b>	<5	<b>0.27J</b>	<5	<5
Dichlorodifluoromethane		<5	<5	<5	<5	<5	<5	<5
<b>Total VOCs</b>		<b>158.27</b>	<b>215.23</b>	<b>304.73</b>	<b>1.7</b>	<b>2229.17</b>	<b>1.4</b>	<b>3.8</b>

ug/L Micrograms per liter  
 B Detected in an associated blank.  
 D Constituent identified at a secondary dilution.  
 J Estimated value  
**Bold** Constituent detected

# ARCADIS

Table 1. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2006, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

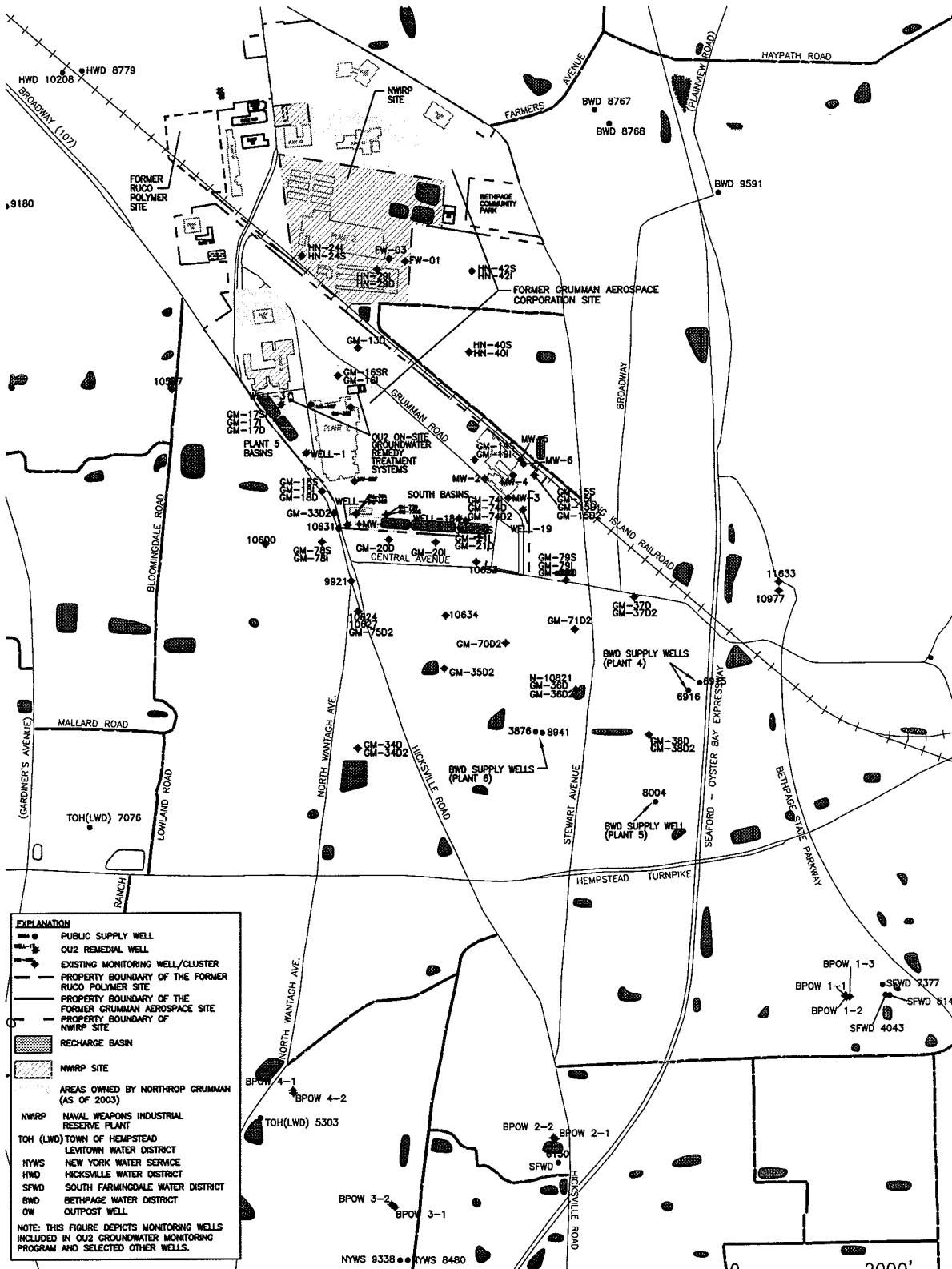
CONSTITUENT (Units in ug/L)	WELL: TRIP BLANK TRIP BLANK TRIP BLANK TRIP BLANK TRIP BLANK				
	SAMPLE ID: TB112106	TB-11-27-06	TB-11-29-06	TB11-30-06	TB12141506
	DATE: 11/21/2006	11/27/2006	11/29/2006	11/30/2006	12/14/2006
Chloromethane	<5	<5	<5	<5	<5
Bromomethane	<5	<5	<5	<5	<5
Vinyl chloride	<2	<2	<2	<2	<2
Chloroethane	<5	<5	<5	<5	<5
Methylene chloride	<b>3.9JB</b>	<b>4.6JB</b>	<b>4.2JB</b>	<b>4.7JB</b>	<b>5.2B</b>
Acetone	<b>4.3J</b>	<b>3.3JB</b>	<b>3.3JB</b>	<b>2.4J</b>	<b>3.1JB</b>
Carbon disulfide	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5
1,1-Dichloroethane	<5	<5	<5	<5	<5
cis-1,2-Dichloroethane	<5	<5	<5	<5	<5
trans-1,2-Dichloroethane	<5	<5	<5	<5	<5
Chloroform	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5
2-Butanone	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	<5	<5	<5	<5	<5
Carbon tetrachloride	<5	<5	<5	<5	<5
Bromodichloromethane	<5	<5	<5	<5	<5
1,2-Dichloropropane	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	<5	<5	<5	<5	<5
Trichloroethene	<5	<5	<5	<5	<5
Dibromochloromethane	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5
Benzene	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	<5	<5	<5	<5	<5
Bromoform	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	<10	<10	<10	<10	<10
2-Hexanone	<10	<10	<10	<10	<10
Tetrachloroethene	<5	<b>1.3JB</b>	<b>1.9JB</b>	<5	<5
1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5
Chlorobenzene	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5
Styrene	<5	<5	<5	<5	<5
Xylene (total)	<5	<5	<5	<5	<5
Vinyl Acetate	<5	<5	<5	<5	<5
Freon 113	<5	<5	<5	<5	<5
Chlorodifluoromethane	<5	<5	<5	<5	<5
Dichlorodifluoromethane	<5	<5	<5	<5	<5
<b>Total VOCs</b>	<b>8.2</b>	<b>9.2</b>	<b>9.4</b>	<b>7.1</b>	<b>8.3</b>

ug/L Micrograms per liter  
 B Detected in an associated blank.  
 D Constituent identified at a secondary dilution.  
 J Estimated value  
**Bold** Constituent detected

Current Plotsyle : ByColor  
Layout Tab: 8.5x11

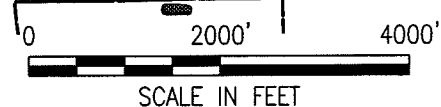
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Path Name : G:\A\PROJECT-Northrop\_Grumman\Cadd\OU2\_2007\001\_OnSite\_Locations.dwg

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EXPLANATION	
	PUBLIC SUPPLY WELL
	OU2 REMEDIAL WELL
	EXISTING MONITORING WELL/CLUSTER
	PROPERTY BOUNDARY OF THE FORMER RUO POLYMER SITE
	PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
	PROPERTY BOUNDARY OF NWRP SITE
	RECHARGE BASIN
	NWRP SITE
	AREAS OWNED BY NORTHROP GRUMMAN (AS OF 2003)
	NWRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
	TOH (LWD) TOWN OF HEMPSTEAD LEVITTOWN WATER DISTRICT
	NYWS NEW YORK WATER SERVICE
	HWD HICKSVILLE WATER DISTRICT
	SFWD SOUTH FARMINGDALE WATER DISTRICT
	BWD BETHPAGE WATER DISTRICT
	OW OUTPOST WELL

NOTE: THIS FIGURE DEPICTS MONITORING WELLS INCLUDED IN OU2 GROUNDWATER MONITORING PROGRAM AND SELECTED OTHER WELLS.



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PROJECT MANAGER C. SAN GIOVANNI	DEPARTMENT MANAGER M. WOLFERT	LEAD DESIGN PROF.	CHECKED BY P. WEST
SHEET TITLE LOCATION OF OU2 ON-SITE GROUNDWATER REMEDY AND WELLS		TASK/PHASE NUMBER 00004	DRAWN BY A. SANCHEZ
		PROJECT NUMBER NY001464.0407	DRAWING NUMBER 1