

SOURCE WATER ASSESSMENT REPORT

System Number: NY5503394

Date: September 30, 2004

System Name: WOODSTOCK WATER DISTRICT

County: ULSTER

Municipality: Woodstock

System Type: Community

This report results from a statewide program called the Source Water Assessment Program (SWAP), in which each source of water that is used for public drinking water is evaluated for possible and actual threats to its quality. The Source Water Assessment Program is designed to compile, organize and evaluate information to make better decisions regarding protecting sources of public drinking water. The information compiled for the assessments will assist the State in overseeing public water systems and protecting their source water quality. The assessments are also intended to assist owners and operators of public water supplies in protecting sources of public drinking water. It is important to note that this source water assessment *estimates* the *potential* for contamination of *sources* of drinking water, **not finished water.**

The New York State Department of Health (NYS DOH) contracted with various organizations to develop the source water assessments. The source water assessment reports are based on reasonably available information, primarily from statewide databases. Although efforts have been made to check these reports for accuracy, the nature of the available data makes the elimination of all error from these reports nearly impossible.

The assessment for each well:

- Delineates the source water assessment area(s) – the assessment area approximates the actual land area which could contribute water (and potential contamination) to the well. The assessment area included two zones: an **inner zone** closer to the well which is more likely to contribute recharge to the ground water pumped by the well, and; an **outer zone**, a more broadly delineated area that could contribute recharge or overland runoff to the well. In most cases, more in-depth hydrogeologic analyses could improve the accuracy of these assessment areas.
- Inventories Contaminant Sources – the land uses and specific facilities, (e.g. landfills, Superfund sites) are reviewed within the well's delineated area to assess their potential to contaminate the ground water. The potential contaminant sources located in the inner assessment zone are given more weight.
- Evaluates Susceptibility to contamination– the assessment will not only look at potential sources of contamination within the delineated area(s), but also how likely contamination will reach that well (referred to as the sensitivity of a well). The assessment will consider both of these factors to determine the overall susceptibility of the well to contamination.

The assessment report that follows summarizes the data and rationale used to evaluate the potential for contaminants to impact the wells for the public water system listed above.

ASSESSMENT SUMMARY

This assessment evaluates the potential for contaminants to enter the groundwater pumped at the following well(s). The maps which are included at the end of this report (Appendix 4) show the well location(s) and the assessment area that includes an inner and outer zone. The assessment area is the estimated surface area that could contribute recharge to the well that was evaluated for potential and actual sources of contamination.

<u>Well Number</u>	<u>Well Name</u>
2568595	DRILLED WELL 1
2568596	DRILLED WELL 2
2568597	DRILLED WELL 3-4-5-6-7

Table of Significant Potential Sources of Contamination			
Well Name: DRILLED WELL 1			
Well Number: 2568595			
Contaminants of Concern	Potential Land Cover Sources of Contamination	Potential Discrete Sources of Contamination	Potential Impact to Water Source
Halogenated Solvents		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Petroleum Products		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Other Industrial Organics		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Metals		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Nitrates		1 SPDES Permitted Facility(s) in Inner zone.	High
Protozoa		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Enteric Bacteria		1 SPDES Permitted Facility(s) in Inner zone.	High
Enteric Viruses	Low Intensity Residential	1 SPDES Permitted Facility(s) in Inner zone.	High
Cations/Anions (Salts, Sulfate)		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High

Table of Significant Potential Sources of Contamination

Well Name: DRILLED WELL 2

Well Number: 2568596

Contaminants of Concern	Potential Land Cover Sources of Contamination	Potential Discrete Sources of Contamination	Potential Impact to Water Source
Halogenated Solvents		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Petroleum Products		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Other Industrial Organics		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Metals		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Nitrates		1 SPDES Permitted Facility(s) in Inner zone.	High
Protozoa		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Enteric Bacteria		1 SPDES Permitted Facility(s) in Inner zone.	High
Enteric Viruses	Low Intensity Residential	1 SPDES Permitted Facility(s) in Inner zone.	High
Cations/Anions (Salts, Sulfate)		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High

Table of Significant Potential Sources of Contamination

Well Name: DRILLED WELL 3-4-5-6-7

Well Number: 2568597

Contaminants of Concern	Potential Land Cover Sources of Contamination	Potential Discrete Sources of Contamination	Potential Impact to Water Source
Halogenated Solvents		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Petroleum Products		1 Underground Storage Tank(s) in Inner zone. 1 SPDES Permitted Facility(s) in Inner zone.	Medium-High Medium-High
Other Industrial Organics		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Metals		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Nitrates		1 SPDES Permitted Facility(s) in Inner zone.	High
Protozoa		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High
Enteric Bacteria		1 SPDES Permitted Facility(s) in Inner zone.	High
Enteric Viruses	Low Intensity Residential	1 SPDES Permitted Facility(s) in Inner zone.	High
Cations/Anions (Salts, Sulfate)		1 SPDES Permitted Facility(s) in Inner zone.	Medium-High

Assessment Methodology

The following sections describe the methodology used for conducting this source water assessment and present some of the intermediate steps and results that are reported in the Table of Significant Findings.

Well Data

Well Number	Well Name	Yield (gpm)	Pump Capacity (gpm)	Facility Flow (gpd)	Well Diameter (in)	Screen Range (ft)	Well Depth (ft)	Casing Depth (ft)
2568595	DRILLED WELL 1	Unknown	Unknown	Unknown	8	Unknown	50	Unknown
2568596	DRILLED WELL 2	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
2568597	DRILLED WELL 3-4-5-6-7	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Delineation

The methods used to delineate the inner and outer zones for the well(s) within this system are summarized below:

Well Number	Inner Zone Method	Original Inner Radius (ft)	Maximum Inner Zone Radius (ft)	Outer Zone Method	Maximum Outer Zone Radius (ft)	Surface Water Influence (GIS)	Surface Water Influence (PWS)
2568595	Combined	1,732	2601	Combined	6031	No	Yes
2568596	Combined	1,732	2368	Combined	6030	No	Yes
2568597	Combined	1,732	2368	Combined	6030	No	Yes

Surface Water Influence Data Sources

GIS - Indication of potential influence based on a surface water body location within inner assessment zone.

PWS - Indication by local health department based on well depth, location near surface water or water quality characteristics.

Sensitivity

The sensitivity of a well to potential sources of contamination is determined by evaluating the well's integrity (depth, casing, etc.), historical monitoring data, and the hydrogeologic factors related to the pathways, fate and transport, and rate of migration of contaminants from sources to the well. The well's sensitivity rating is intended to provide an indication of the potential for contaminant movement toward a well within the natural hydrogeologic setting. There are two separate sensitivity ratings for each well, one rating for chemical contaminants and one rating for microbiological contaminants.

Well Number & Name:	Class:	Sensitivity:	Reason(s):
2568595 DRILLED WELL 1	Chemical	Unknown	Based on the data provided, the well draws from an unconfined aquifer of unknown hydraulic conductivity.
	Microbial	Unknown	Based on the data provided, the well draws from an unconfined aquifer of unknown hydraulic conductivity.
2568596 DRILLED WELL 2	Chemical	Unknown	Based on the data provided, the well draws from an unconfined aquifer of unknown hydraulic conductivity.
	Microbial	Unknown	Based on the data provided, the well draws from an unconfined aquifer of unknown hydraulic conductivity.
2568597 DRILLED WELL 3-4-5-6-7	Chemical	Unknown	Based on the data provided, the well draws from an unconfined aquifer of unknown hydraulic conductivity.
	Microbial	Unknown	Based on the data provided, the well draws from an unconfined aquifer of unknown hydraulic conductivity.

Contaminant Inventory / Contaminant Prevalence

A contaminant inventory of potential sources of contamination to the well(s) was developed for the delineated inner and outer zones of the assessment area. These contaminant inventories utilize contaminant categories, rather than individual contaminants. Categories were created to simplify this task by looking at susceptibility to groups of contaminants. The categories are based on similarities in origin, consequences in drinking water, and fate and transport in the environment. The contaminant categories that have been identified as important in groundwater are noted in the Glossary (Appendix 1).

Two different types of contaminant inventories were created for each source water assessment. The first type represents the potential sources of contamination from non-point source activities (land cover types). GIS software (ArcView Spatial Analyst) was used to calculate percent coverage of National Land Cover Dataset (NLCD) categories within each assessment zone. The potential for contamination from the various land coverages in the NCLD database was derived from tables in the SWAP plan. Then, based on these percentages of land coverage, contaminant prevalence ratings were derived using procedures outlined in the SWAP plan.

The second type of contaminant inventory is a listing of potential contaminant sources within the assessment zones that are associated with discrete locations. Discrete potential contaminant sources (PCSSs) within the delineated areas were identified using GIS linked databases. (A summary of GIS databases used for this assessment can be found in Appendix 2 of this report). Many of the discrete sources are associated with facilities (e.g. industrial facilities, spill locations) that are permitted or otherwise regulated by the New York State Department of Environmental Conservation and/or the United States Environmental Protection Agency.

Additional discrete sources have been identified by health department staff and entered into the Public Water System (PWS) database. The NYS DOH has compiled information on discrete potential sources of contamination (that may not be included in GIS coverages) in the PWS database. This information represents contamination concerns noted during inspections and sanitary surveys of public water systems, and in some cases, information provided by the public water system. Some of these potential sources of contamination may appear on GIS coverages, but more often they will only be listed in the PWS database. While these local potential contaminant sources (e.g. septic systems and manure piles) are usually small in size, they can pose the greatest threat of contamination to the well if pumpage is low. The location of these discrete potential contaminant sources only includes an estimated linear distance to the well that is used to indicate the location within the inner zone or any special distance zone. No ratings were given to any of these types of potential contaminant sources located beyond the inner well zone or special distance zone, unless there is a demonstrated impact on the well.

The importance of the discrete potential contaminant sources was individually rated as either major or minor using guidance developed by the NYS DOH. A contaminant prevalence rating was then created based on these ratings, their location in relation to the well (i.e. inner zone vs. outer zone) and the quantity of these sources, using logic tables outlined in the SWAP plan.

Results of the contaminant prevalence determinations are summarized in the Susceptibility Analysis Summary Table below. Tables for the contaminant inventory / contaminant prevalence determination steps are listed in the Individual Well Assessment section of this report.

Susceptibility Determination

The assessments not only look at sources of contamination within the delineated area for each well (contaminant inventory/ contaminant prevalence), but also the likelihood that contamination will reach that well (sensitivity). The assessment considers both of these factors to determine the overall susceptibility of the well to contamination.

Susceptibility Analysis Summary Table

Well Name: DRILLED WELL 1					
Well Number: 2568595					
Contaminant Category	Contaminant Prevalence Rating			Sensitivity	Susceptibility
	Land Cover Rating	Discrete Source Rating	Higher/Final Rating		
Halogenated Solvents	Low	Medium	Medium	Unknown	Medium-High
Petroleum Products	Low	Medium	Medium	Unknown	Medium-High
Herbicides/Pesticides	Low	NR	Low	Unknown	NR
Other Industrial Organics	Low	Medium	Medium	Unknown	Medium-High
Metals	Low	Medium	Medium	Unknown	Medium-High
Nitrates	Low	High	High	Unknown	High
Protozoa	Low	Medium	Medium	Unknown	Medium-High
Enteric Bacteria	Low	High	High	Unknown	High
Enteric Viruses	Medium	High	High	Unknown	High
Cations/Anions (Salts, Sulfate)	Low	Medium	Medium	Unknown	Medium-High

Well Name: DRILLED WELL 2					
Well Number: 2568596					
Contaminant Category	Contaminant Prevalence Rating			Sensitivity	Susceptibility
	Land Cover Rating	Discrete Source Rating	Higher/Final Rating		
Halogenated Solvents	Low	Medium	Medium	Unknown	Medium-High
Petroleum Products	Low	Medium	Medium	Unknown	Medium-High
Herbicides/Pesticides	Low	NR	Low	Unknown	NR
Other Industrial Organics	Low	Medium	Medium	Unknown	Medium-High
Metals	Low	Medium	Medium	Unknown	Medium-High
Nitrates	Low	High	High	Unknown	High
Protozoa	Low	Medium	Medium	Unknown	Medium-High
Enteric Bacteria	Low	High	High	Unknown	High
Enteric Viruses	Medium	High	High	Unknown	High
Cations/Anions (Salts, Sulfate)	Low	Medium	Medium	Unknown	Medium-High

Well Name: DRILLED WELL 3-4-5-6-7					
Well Number: 2568597					
Contaminant Category	Contaminant Prevalence Rating			Sensitivity	Susceptibility
	Land Cover Rating	Discrete Source Rating	Higher/Final Rating		
Halogenated Solvents	Low	Medium	Medium	Unknown	Medium-High
Petroleum Products	Low	Medium	Medium	Unknown	Medium-High
Herbicides/Pesticides	Low	NR	Low	Unknown	NR
Other Industrial Organics	Low	Medium	Medium	Unknown	Medium-High
Metals	Low	Medium	Medium	Unknown	Medium-High
Nitrates	Low	High	High	Unknown	High
Protozoa	Low	Medium	Medium	Unknown	Medium-High
Enteric Bacteria	Low	High	High	Unknown	High
Enteric Viruses	Medium	High	High	Unknown	High
Cations/Anions (Salts, Sulfate)	Low	Medium	Medium	Unknown	Medium-High

Individual Well Assessments

Well Name: DRILLED WELL 1			
Well Number: 2568595			
Delineation Method		Sensitivity Rating	
Inner Zone	Outer Zone	Chemical	Microbiological
Combined	Combined	Unknown	Unknown

1. Contaminant Inventory - Land Cover / Land Use

Well Name: DRILLED WELL 1		
Well Number: 2568595		
Land Cover Classification	Inner Assessment Zone % Land Cover	Outer Assessment Zone % Land Cover
Water	0.00	0.02
Low Intensity Residential	33.17	10.04
High Intensity Residential	4.14	1.06
High Intensity Commercial	5.19	2.96
Pasture	0.24	4.60
Row Crop	0.00	0.57
Other Grasses	0.89	0.83
Forest Evergreen	22.47	26.72
Forest Mixed	25.06	39.16
Forest Deciduous	8.84	14.03
Woody Wetlands	0.00	0.00
Emergent WELANDS	0.00	0.00
Barren (Bare rock and sand)	0.00	0.00
Barren (Quarries, mines, pits)	0.00	0.01
Barren (Transitional, clearcut)	0.00	0.00

2. **Contaminant Prevalence - Land Cover / Land Use**

Well Name: DRILLED WELL 1		
Well Number: 2568595		
Contaminant Category	Contaminant Prevalence Rating	Driving Land Use
Halogenated Solvents	Low	
Petroleum Products	Low	
Herbicides/Pesticides	Low	
Other Industrial Organics	Low	
Metals	Low	
Nitrates	Low	
Protozoa	Low	
Enteric Bacteria	Low	
Enteric Viruses	Medium	Low Intensity Residential (Inner Zone - 33.17) & Low Intensity Residential (Outer Zone - 10.04)
Cations/Anions (Salts, Sulfate)	Low	

3. **Contaminant Inventory - Discrete Sources - GIS**

Well Name: DRILLED WELL 1			
Well Number: 2568595			
Type	Identifier	Distance & Direction	Zone
SPDES Permitted Facility	3515800062	1460 feet N	Inner
SPDES Permitted Facility	3515800061	2592 feet NE	Outer
SPDES Permitted Facility	3515800091	1917 feet N	Outer

Note: GIS PCS data have been updated according to the most recent information received from each county. This information may not be presented on the maps.

4. Contaminant Inventory - Public Water Supply Database

Well Name: DRILLED WELL 1		
Well Number: 2568595		
Source	Distance (ft)	Zone

No PCSs were noted within Zone 1 or Zone 2 of this well in the PWS Database.

5. Contaminant Prevalence - Discrete Sources

Well Name: DRILLED WELL 1										
Well Number: 2568595										
Contaminant Category	Inner Assessment Zone				Outer Assessment Zone				Overall Rating	Driver for Medium/High Rating
	Major		Minor		Major		Minor			
	Number of PCS	Rating	Number of PCS	Rating	Number of PCS	Rating	Number of PCS	Rating		
Halogenated Solvents	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Petroleum Products	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Herbicides/Pesticides	None	NR	None	NR	None	NR	None	NR	NR	
Other Industrial Organics	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Metals	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Nitrates	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Protozoa	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Enteric Bacteria	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Enteric Viruses	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Cations/Anions (Salts, Sulfate)	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.

6. Susceptibility Analysis Summary

Well Name: DRILLED WELL 1					
Well Number: 2568595					
Contaminant Category	Contaminant Prevalence Rating			Sensitivity	Susceptibility
	Land Cover Rating	Discrete Source Rating	Higher/Final Rating		
Halogenated Solvents	Low	Medium	Medium	Unknown	Medium-High
Petroleum Products	Low	Medium	Medium	Unknown	Medium-High
Herbicides/Pesticides	Low	NR	Low	Unknown	NR
Other Industrial Organics	Low	Medium	Medium	Unknown	Medium-High
Metals	Low	Medium	Medium	Unknown	Medium-High
Nitrates	Low	High	High	Unknown	High
Protozoa	Low	Medium	Medium	Unknown	Medium-High
Enteric Bacteria	Low	High	High	Unknown	High
Enteric Viruses	Medium	High	High	Unknown	High
Cations/Anions (Salts, Sulfate)	Low	Medium	Medium	Unknown	Medium-High

Individual Well Assessments

Well Name: DRILLED WELL 2			
Well Number: 2568596			
Delineation Method		Sensitivity Rating	
Inner Zone	Outer Zone	Chemical	Microbiological
Combined	Combined	Unknown	Unknown

1. Contaminant Inventory - Land Cover / Land Use

Well Name: DRILLED WELL 2		
Well Number: 2568596		
Land Cover Classification	Inner Assessment Zone % Land Cover	Outer Assessment Zone % Land Cover
Water	0.00	0.02
Low Intensity Residential	33.17	10.04
High Intensity Residential	4.14	1.06
High Intensity Commercial	5.19	2.96
Pasture	0.24	4.60
Row Crop	0.00	0.57
Other Grasses	0.89	0.83
Forest Evergreen	22.47	26.72
Forest Mixed	25.06	39.16
Forest Deciduous	8.84	14.03
Woody Wetlands	0.00	0.00
Emergent WELANDS	0.00	0.00
Barren (Bare rock and sand)	0.00	0.00
Barren (Quarries, mines, pits)	0.00	0.01
Barren (Transitional, clearcut)	0.00	0.00

2. **Contaminant Prevalence - Land Cover / Land Use**

Well Name: DRILLED WELL 2		
Well Number: 2568596		
Contaminant Category	Contaminant Prevalence Rating	Driving Land Use
Halogenated Solvents	Low	
Petroleum Products	Low	
Herbicides/Pesticides	Low	
Other Industrial Organics	Low	
Metals	Low	
Nitrates	Low	
Protozoa	Low	
Enteric Bacteria	Low	
Enteric Viruses	Medium	Low Intensity Residential (Inner Zone - 33.17) & Low Intensity Residential (Outer Zone - 10.04)
Cations/Anions (Salts, Sulfate)	Low	

3. **Contaminant Inventory - Discrete Sources - GIS**

Well Name: DRILLED WELL 2			
Well Number: 2568596			
Type	Identifier	Distance & Direction	Zone
SPDES Permitted Facility	3515800062	1851 feet N	Inner
SPDES Permitted Facility	3515800061	2146 feet NE	Outer
SPDES Permitted Facility	3515800091	2054 feet N	Outer

Note: GIS PCS data have been updated according to the most recent information received from each county. This information may not be presented on the maps.

4. Contaminant Inventory - Public Water Supply Database

Well Name: DRILLED WELL 2		
Well Number: 2568596		
Source	Distance (ft)	Zone

No PCSs were noted within Zone 1 or Zone 2 of this well in the PWS Database.

5. Contaminant Prevalence - Discrete Sources

Well Name: DRILLED WELL 2										
Well Number: 2568596										
Contaminant Category	Inner Assessment Zone				Outer Assessment Zone				Overall Rating	Driver for Medium/High Rating
	Major		Minor		Major		Minor			
	Number of PCS	Rating	Number of PCS	Rating	Number of PCS	Rating	Number of PCS	Rating		
Halogenated Solvents	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Petroleum Products	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Herbicides/Pesticides	None	NR	None	NR	None	NR	None	NR	NR	
Other Industrial Organics	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Metals	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Nitrates	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Protozoa	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Enteric Bacteria	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Enteric Viruses	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Cations/Anions (Salts, Sulfate)	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.

6. Susceptibility Analysis Summary

Well Name: DRILLED WELL 2					
Well Number: 2568596					
Contaminant Category	Contaminant Prevalence Rating			Sensitivity	Susceptibility
	Land Cover Rating	Discrete Source Rating	Higher/Final Rating		
Halogenated Solvents	Low	Medium	Medium	Unknown	Medium-High
Petroleum Products	Low	Medium	Medium	Unknown	Medium-High
Herbicides/Pesticides	Low	NR	Low	Unknown	NR
Other Industrial Organics	Low	Medium	Medium	Unknown	Medium-High
Metals	Low	Medium	Medium	Unknown	Medium-High
Nitrates	Low	High	High	Unknown	High
Protozoa	Low	Medium	Medium	Unknown	Medium-High
Enteric Bacteria	Low	High	High	Unknown	High
Enteric Viruses	Medium	High	High	Unknown	High
Cations/Anions (Salts, Sulfate)	Low	Medium	Medium	Unknown	Medium-High

Individual Well Assessments

Well Name: DRILLED WELL 3-4-5-6-7			
Well Number: 2568597			
Delineation Method		Sensitivity Rating	
Inner Zone	Outer Zone	Chemical	Microbiological
Combined	Combined	Unknown	Unknown

1. Contaminant Inventory - Land Cover / Land Use

Well Name: DRILLED WELL 3-4-5-6-7		
Well Number: 2568597		
Land Cover Classification	Inner Assessment Zone % Land Cover	Outer Assessment Zone % Land Cover
Water	0.00	0.02
Low Intensity Residential	33.17	10.04
High Intensity Residential	4.14	1.06
High Intensity Commercial	5.19	2.96
Pasture	0.24	4.60
Row Crop	0.00	0.57
Other Grasses	0.89	0.83
Forest Evergreen	22.47	26.72
Forest Mixed	25.06	39.16
Forest Deciduous	8.84	14.03
Woody Wetlands	0.00	0.00
Emergent WELANDS	0.00	0.00
Barren (Bare rock and sand)	0.00	0.00
Barren (Quarries, mines, pits)	0.00	0.01
Barren (Transitional, clearcut)	0.00	0.00

2. **Contaminant Prevalence - Land Cover / Land Use**

Well Name: DRILLED WELL 3-4-5-6-7		
Well Number: 2568597		
Contaminant Category	Contaminant Prevalence Rating	Driving Land Use
Halogenated Solvents	Low	
Petroleum Products	Low	
Herbicides/Pesticides	Low	
Other Industrial Organics	Low	
Metals	Low	
Nitrates	Low	
Protozoa	Low	
Enteric Bacteria	Low	
Enteric Viruses	Medium	Low Intensity Residential (Inner Zone - 33.17) & Low Intensity Residential (Outer Zone - 10.04)
Cations/Anions (Salts, Sulfate)	Low	

3. **Contaminant Inventory - Discrete Sources - GIS**

Well Name: DRILLED WELL 3-4-5-6-7			
Well Number: 2568597			
Type	Identifier	Distance & Direction	Zone
SPDES Permitted Facility	3515800062	1851 feet N	Inner
SPDES Permitted Facility	3515800061	2146 feet NE	Outer
SPDES Permitted Facility	3515800091	2054 feet N	Outer

Note: GIS PCS data have been updated according to the most recent information received from each county. This information may not be presented on the maps.

4. Contaminant Inventory - Public Water Supply Database

Well Name: DRILLED WELL 3-4-5-6-7		
Well Number: 2568597		
Source	Distance (ft)	Zone
Underground Storage Tank	200	Inner

5. Contaminant Prevalence - Discrete Sources

Well Name: DRILLED WELL 3-4-5-6-7										
Well Number: 2568597										
Contaminant Category	Inner Assessment Zone				Outer Assessment Zone				Overall Rating	Driver for Medium/High Rating
	Major		Minor		Major		Minor			
	Number of PCS	Rating	Number of PCS	Rating	Number of PCS	Rating	Number of PCS	Rating		
Halogenated Solvents	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Petroleum Products	None	NR	2	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone. 1 Underground Storage Tank(s) in Inner zone.
Herbicides/Pesticides	None	NR	None	NR	None	NR	None	NR	NR	
Other Industrial Organics	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Metals	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Nitrates	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Protozoa	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.
Enteric Bacteria	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Enteric Viruses	1	High	None	NR	2	Medium	None	NR	High	1 SPDES Permitted Facility(s) in Inner zone.
Cations/Anions (Salts, Sulfate)	None	NR	1	Medium	None	NR	2	Low	Medium	1 SPDES Permitted Facility(s) in Inner zone.

6. Susceptibility Analysis Summary

Well Name: DRILLED WELL 3-4-5-6-7					
Well Number: 2568597					
Contaminant Category	Contaminant Prevalence Rating			Sensitivity	Susceptibility
	Land Cover Rating	Discrete Source Rating	Higher/Final Rating		
Halogenated Solvents	Low	Medium	Medium	Unknown	Medium-High
Petroleum Products	Low	Medium	Medium	Unknown	Medium-High
Herbicides/Pesticides	Low	NR	Low	Unknown	NR
Other Industrial Organics	Low	Medium	Medium	Unknown	Medium-High
Metals	Low	Medium	Medium	Unknown	Medium-High
Nitrates	Low	High	High	Unknown	High
Protozoa	Low	Medium	Medium	Unknown	Medium-High
Enteric Bacteria	Low	High	High	Unknown	High
Enteric Viruses	Medium	High	High	Unknown	High
Cations/Anions (Salts, Sulfate)	Low	Medium	Medium	Unknown	Medium-High

APPENDICES

1. **Glossary**
2. **Available Information**
A list of state and federal databases and GIS coverages used in preparing this assessment report.
3. **SDWIS Report**
Public water system data and information summarized from the Safe Drinking Water Information System (SDWIS) with additional source water assessment information, about a specific public water system.
4. **Maps**
Maps of the public water system sources assessed in this report illustrating the delineated assessment zones and potential contaminant sources for each well. The first map illustrates information with color infrared aerial photos (note: bright red color implies lush vegetation) and the second map illustrates the assessment zones and well locations relative to roads and water bodies near the public water system well(s).

GLOSSARY

Aquifer. A geologic formation that is capable of storing and transmitting water in a usable quantity to a spring or well.

CERCLIS. Comprehensive Environmental Response, Compensation and Liability Information System (a.k.a. Superfund). A national database and management system that EPA uses to track activities at hazardous waste sites considered for cleanup under CERCLA.

Community Water System. A public water supply which serves at least 5 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Confined Aquifer. An aquifer saturated with water and bounded above and below by a soil layer or rock formation that restricts the passage of ground water.

Contaminant Categories. Groups of contaminants that have been grouped based on similar fate and transport characteristics. A description of each contaminant category is listed in the Table of Contaminant Categories below.

Contaminant Inventory. A list of possible contaminant sources within the delineated source water assessment area(s).

Contaminants of Concern. Contaminant categories (or individual contaminants) that have been identified as a potential threat to the water quality of a public drinking water source.

Contaminant Prevalence. The overall ranking of the potential presence of contaminants of concern by category. The rating combines discrete potential sources of contamination and land use within the assessment area(s).

Data Coverages. Databases that are associated with locations that can be seen on a map. Multiple coverages can be shown on a map at the same time.

Discrete Source. A GIS term that describes sources that are identified and mapped as a point or line, rather than an area (e.g. landfills; SPDES facilities; and pipelines).

Geographic Information System (GIS). A computerized database/mapping system that may be used to store, retrieve, and analyze information based on geographic location.

Ground water. Water that has reached an underground zone where all the openings in the soil or rock are filled with water.

Hydraulic Conductivity. A measure of the ability of a soil or rock material to transmit water.

Inner Well Zone. An area immediately surrounding a well or well field of a public water supply that has been defined for the purpose of determining the susceptibility of a well to contamination. Potential sources of contamination within the inner well zone are given a higher level of scrutiny when determining the overall susceptibility of a well source.

Local Health Department. A county health department or state funded district health office that provides oversight of public drinking water systems.

National Land Coverage Data (NLCD). A land cover classification and mapping scheme used by the USGS and EPA to classify land types across the US for use in GIS (e.g. water; residential; commercial; forest; pasture; row crops; etc.).

NPDES. National Pollution Discharge Elimination System. National permit program which controls water pollution by regulating point (discrete) sources that discharge pollutants into waters of the United States.

NR. Not Rated for the purposes of SWAP because it is unlikely to affect source water quality.

Non-community water system. A public water system that is not a community water system.

Non-transient Non-community water system. A public water system that is not a community water system but is a subset of a non-community water system that regularly serves at least 25 of the same persons, four hours or more per day, for four or more days per week, for 26 or more weeks per year.

Outer Well Zone. An area surrounding the inner well zone which has been delineated for the purpose of determining the susceptibility of a public water supply well to contamination. Ground water within the outer well zone is assumed to take a longer period of time to reach the wellhead than the ground water within the inner wellhead zone.

RCRA. Resource Conservation and Recovery Act. The primary Federal statute regulating the control of and disposal of solid and hazardous waste.

Recharge area. A section of land that receives precipitation and allows it to infiltrate an aquifer.

GLOSSARY (Continued)

Safe Drinking Water Act. The federal law which authorizes the U.S. Environmental Protection Agency and states to oversee public water systems and set standards for drinking water.

Sensitivity. The existing hydrogeologic conditions of a drinking water source and the integrity of the well(s) itself.

Significant Potential Source of Contamination.

A facility or activity that has the potential to release contaminants in sufficient amounts to deteriorate water quality at a public water source.

SPDES. State Pollution Discharge Elimination System. A NYS DEC permit program which controls water pollution by regulating point (discrete) sources that discharge pollutants into NYS waters.

Susceptibility Analysis. An evaluation of sensitivity and contaminant prevalence of a source water area to determine the potential for contaminants to deteriorate water quality.

SWAP Plan (Source Water Assessment Program Plan). The EPA-approved plan developed by the DOH to conduct source water assessments for New York State public water supplies. (Nov 1999). Available at: www.health.state.ny.us/nysdoh/water/swap.htm

TRI. Toxic Release Inventory. Federal program that inventories the release and transfer of toxic chemicals from industrial facilities.

Unconfined Aquifer. A shallow aquifer that occurs immediately below the ground surface with no intervening layer of lower hydraulic conductivity. Also known as a water table aquifer because the upper boundary of the saturated portion of the aquifer is formed by the ground water table. Generally, these aquifers are more sensitive to contamination than confined aquifers.

Table of Contaminant Categories		
Contaminant Category	Type^{1,2}	Examples
Halogenated Solvents	chemical	degreasers, drycleaning fluids: <i>trichloroethene (TCE); trichloroethane (TCA); tetrachloroethene (PCE)</i>
Petroleum Products	chemical	Gasoline/fuel oil: <i>benzene, toluene, xylenes, MTBE, etc.</i>
Pesticides	chemical	chemicals used to kill insects, rodents and weeds: <i>aldrin; chlordane; 2,4-D; atrazine; etc.</i>
Other Industrial Organics	chemical	various organic chemicals used in industrial processes, including: <i>phenols; PCBs; PAHs; etc.</i>
Metals	chemical	<i>cadmium, mercury, silver, etc.</i>
Nitrates	chemical	drinking water contaminant that can originate from the overuse of chemical fertilizers and improper disposal of human and animal wastes. Within the context of the SWAP, it also includes <i>nitrites.</i>
Protozoa	microbiological	pathogens, such as <i>Giardia</i> and <i>Cryptosporidium</i> that are larger than bacteria.
Enteric Bacteria	microbiological	coliform and pathogenic bacteria, such as <i>Salmonella</i>
Enteric Viruses	microbiological	small pathogens, such as <i>Norwalk</i> and <i>Coxsackie</i> viruses.
Cations/anions	chemical	salts (<i>sodium, chloride</i>)

¹ Chemical – pertaining to the properties of chemistry.

² Microbiological – pertaining to microscopic forms of life

GIS Coverages and Databases Used in Assessments

Coverage	Abbreviation	Discrete Potential Contaminant Source Identifying Field Name	Coverage Owner	Coordinate System	Projection	Scale	Metadata Available	Update Interval	Most Recent Update
PWS Data Bases/Coverages									
NYSDOH Public Water System (PWS) Database: SDWIS	SDWIS	N/A, but TINWSF_ID is the unique identifying field	NYSDOH and Local Health Departments	Latitude/ Longitude	NAD 83	Varies	Yes	Quarterly	October 2001
NYSDOH Public Water System (PWS) Database: SWAP Add-on	SWAPAO	N/A, but TINWSF_ID is the unique identifying field	NYSDOH and Local Health Departments	Latitude/ Longitude	NAD 83	Varies	Yes	Occasional	October 2001
NYSDOH Public Water System (PWS) Database: SWAP data processed by NYSDOH	SWAPDOH	N/A, but TINWSF_ID is the unique identifying field	NYSDOH and Local Health Departments	Latitude/ Longitude	NAD 83	Varies	Yes	Not anticipated	October 2001
Hydrography/Hydrology Data Bases/Coverages									
Hydrography Data	Hydrog	N/A	NYSDOT	UTM, Zone 18	NAD 83	1:250,000	Yes	Ongoing	May 2000
Geology	Geo	N/A	NYSDEC/ NYSEd	UTM, Zone 18	NAD 27	1:100,000	Yes	Not anticipated	2001
Geology (Surficial) for selected USGS quadrangle maps	SurfGeo	N/A	NYSDEC	UTM, Zone 18	NAD 83	1:24,000	Yes	Not anticipated	1999
Primary Aquifers	NA	N/A	NYSDEC	UTM, Zone 18	NAD 27	1:24,000	Yes	Not anticipated	February 2000
Soil Surveys at 1:24,000 scale	NA	N/A	NRCS	UTM, Zone 18	NAD 83	1:24,000	Yes	Ongoing	Varies
Topographic Maps (United States Geological Service Quadrangles)	Topo	N/A	NYSDOH, original data from USGS	UTM, Zone 18	NAD 83	1:24,000	Yes	Not anticipated	Varies
Unconsolidated Aquifer	Uaq	N/A	NYSDOH	UTM, Zone 18	NAD 83	1:250,000	Yes	Not anticipated	July 2001
Potential Contaminant Sources Data Bases/Coverages									
CERCLIS, Federal Superfund Sites	CERCLIS	PROGRAM_ID	USEPA	UTM, Zone 18	NAD 83	Unknown	Yes	Periodic	February 1999
Chemical & Petroleum Spills (HSEES)	HSEES	EVENT_ID	NYSDEC	UTM, Zone 18	NAD 83	Varies	Yes	Not anticipated	2000
Chemical Bulk Storage (Aboveground)	CBS-A	CBSNO	NYSDEC	UTM, Zone 18	NAD 83	1:24,000	Yes	Not anticipated	2000
Chemical Bulk Storage (Underground)	CBS-U	CBSNO	NYSDEC	UTM, Zone 18	NAD 83	1:24,000	Yes	Not anticipated	2000
Digital Orthophotos (DOQQ)	Dortho	N/A	Multiple Agencies	UTM, Zone 18	NAD 27/83	approx. 1:12,000	Yes	Ongoing	Ongoing
Hazardous Waste Treatment, Storage & Disposal Facilities (RCRA Facilities)	RCRA	PROGRAM_ID	USEPA	UTM, Zone 18	NAD 83	Unknown	Yes	Yearly	February 1999
Inactive Hazardous Waste Disposal Sites	IHW	SCODE	NYSDEC	Latitude/ Longitude	NAD 83	1:24,000	Yes	Every April	April 1999
Landfills (Active)	LF	FACNUMBR	NYSDEC	UTM, Zone 18	NAD 83	Unknown	Yes	Yearly	June 1999
Mines	MINE	MINES_ID	NYSDEC	UTM, Zone 18	NAD 83	Unknown	Yes	Yearly	September 1999
National Land Cover Dataset (NLCD), formerly MRLC	NLCD	N/A	Multiple Agencies	UTM, Zone 18	NAD 83	30 meter pixel	Yes	Not anticipated	January 1997
National Pollutant Discharge Elimination System (NPDES)	NPDES	NPDES	USEPA	UTM, Zone 18	NAD 83	Unknown	Yes	Yearly	February 1999
National Pollutant Discharge Elimination System (NPDES)	NPDES PIPES	NPDES_ID	USEPA	UTM, Zone 18	NAD 83	Unknown	Yes	Yearly	February 1999
Oil and Gas Wells (Active)	OGW	WELLS_ID	NYSDEC	UTM, Zone 18	NAD 83	Unknown	Yes	Yearly	September 1999
Petroleum Bulk Storage (MOSF)	PBS	MOSFNO	NYSDEC	UTM, Zone 18	NAD 83	Unknown	Yes	Not anticipated	2000
Petroleum Pipelines	NA	PLINE_ID	USDOT	Latitude/ Longitude	NAD 83	Unknown	Yes	As needed	March 30, 1999
SPDES Permitted Discharge Facilities including Publicly Owned Sewage Treatment Works (Permit Compliance System)	PCS-SPDES	SPDES	NYSDEC	UTM, Zone 18	NAD 83	Varies	Yes	Yearly	July 26, 2000
Toxic (Chemical) Release Inventory	TRI	TRID	NYSDEC/NYS DOH/USEPA	UTM, Zone 18	NAD 83	Unknown	Yes	Yearly	September 2000

SDWIS Report

All Sources have Watershed Rules? No

All Sources have Disinfection Waivers? No

VOC/SOC Determination Method: vulnerable, population greater than 3,300. Shallow gravel wells. Wells 3-7 less than 200 feet from residential housing/fuel oil tanks

Existing Source Protection Method: Some Well casings have been raised above flood plain

Jurisdiction of the Source Area:

Are there any Ground Water Rule Issues? No

Ground Water Rule Issues:

Significant Public Impression of Source Contamination? No

Significant Public Impression of Source Water Quality? No

Is there extra system data available? Yes

Are there system treatment concerns? No

Is the distribution system complex? No

Are there any concerns in the Local Regulating Agency? Yes

Wells udswi.
Under orders to install corrosion control treatment due to lead failure..

Source Name DRILLED WELL 1

TINWSF Number 2568595

Source Type Well

Water Typ

Design Capacity 0

Well head protection plan created?

Yes

Delineation Date

2/25/2002

Delineation Type:

NONE

Delineation Description

Water Body Distance

1000

Determination Method

est

Surface Water Influence?

Yes

Surface Water Description

Sawkill creek. Flows vary seasonally

Structural or locational concerns:

Existing contaminant inventory date:

Existing Contaminant Inventorv:

Potential Contaminant Sources Near the Source? No

Significant Sanitary Survey Findings:

Log Detail

See engineering files

Well Detail

Well Depth at Completi	50	Production Rate (gp)	0
Well Diamet	8	Casing Diameter	8
Well Coverin	CAST	Casing Typ	IRON

Source Name DRILLED WELL 2

TINWSF Number

2568596

Source Type Well

Water Typ

Design Capacity 0

Well head protection plan created?

Yes

Delineation Date

2/25/2002

Delineation Type:

NONE

Delineation Description

Water Body Distance

1000

Determination Method

est

Surface Water Influence?

Yes

Surface Water Description

Sawkill Creek

Structural or locational concerns:

Existing contaminant inventory date:

Existing Contaminant Inventorv:

Potential Contaminant Sources Near the Source? No

Significant Sanitary Survey Findings:

Well in pumphouse basement. Some chemical storage over well (Chlorine crock, Ph adjustment)

Log Detail

See engineering files

Well Detail

Well Depth at Completi

0

Production Rate (gp)

0

Well Diamet

0

Casing Diameter

0

Well Coverin

Casing Typ

Source Name DRILLED WELL 3-4-5-6-7

TINWSF Number 2568597

Source Type Well **Water Typ**

Design Capacity 0

Well head protection plan created? No
Delineation Date 2/25/2002
Delineation Type: NONE
Delineation Description
Water Body Distance 75
Determination Method est
Surface Water Influence? Yes
Surface Water Description Sawkill Creek. Flows vary seasonally and annually. Water course varies.
Structural or locational concerns: Casings of four wells have been raised above flood plain. One well in below grade in pumphouse
Existing contaminant inventory date:
Existing Contaminant Inventorv:
Potential Contaminant Sources Near the Source? No
Significant Sanitary Survey Findings: Wells located next to residential area. Buried fuel oil tanks.
Log Detail 1999- wells video taped prior to refurbishing. Tapes on file with Water District.

Well Detail

Well Depth at Completi	0	Production Rate (gp)	0
Well Diamet	0	Casing Diameter	0
Well Coverin		Casing Typ	

Potential Contaminant Sources

Source	Distance	Zone
Underground Storage Tank	200 feet	

Source Water Assessment

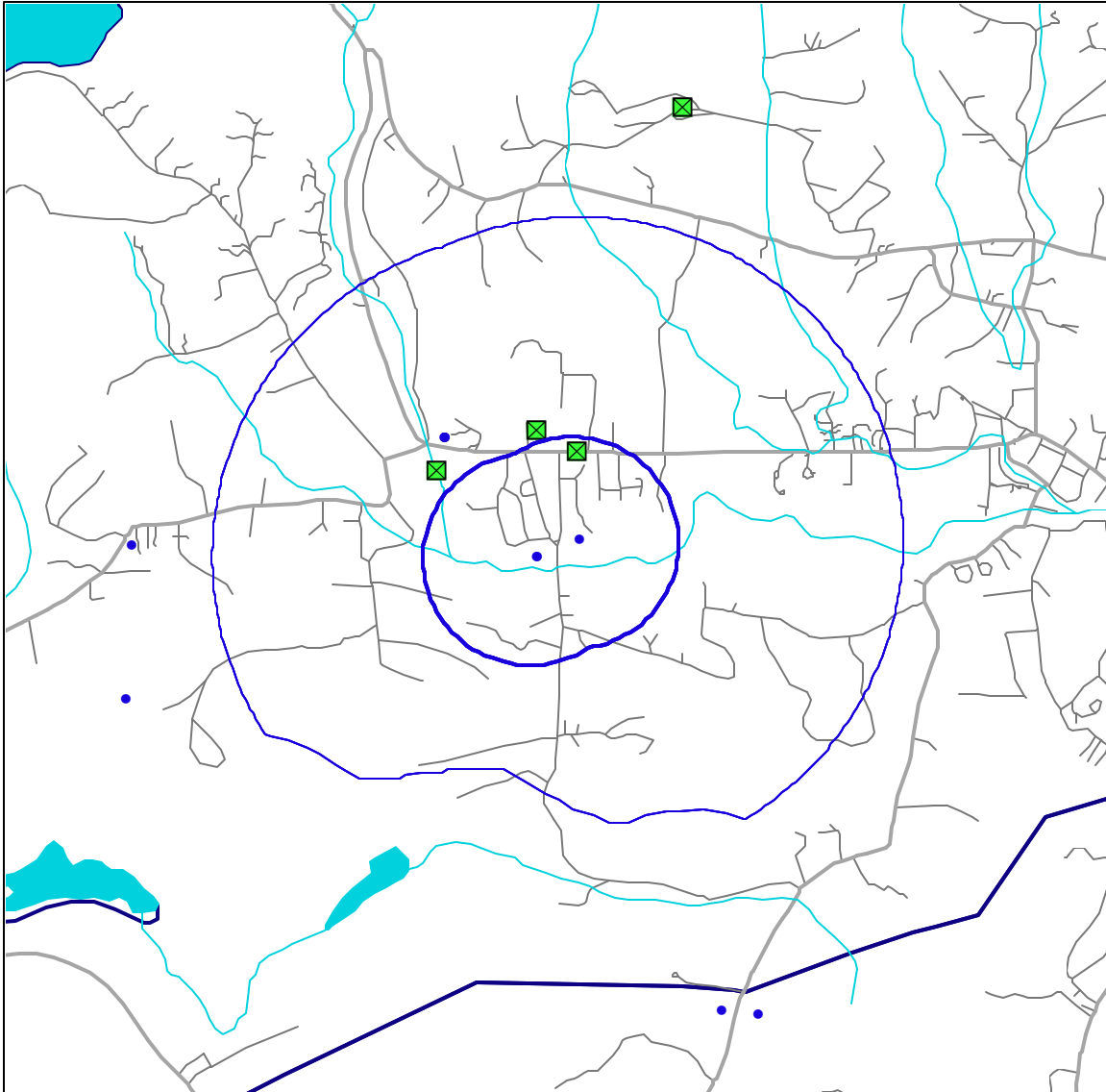
County: Ulster

Public Water System: Woodstock Water District

Municipality: Woodstock

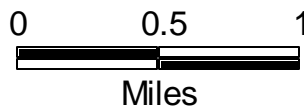
System ID: NY5503394

2003 April 29



Legend: Basemap Data

- ⊗ Mines
- ⊗ Oil & Gas Wells
- Petroleum Pipelines
- Streams
- Water Bodies
- Principal Highways
- State Highways
- County Roads
- Ulster County Boundary
- County Boundaries



Legend: Assessment Data

- Public Water Supply Well
- Inner Assessment Area
- Outer Assessment Area
- Landfills
- Petroleum Bulk Storage
- Chemical Bulk Storage
- Hazardous Substance Spills
- TRI Facilities
- RCRA Facilities
- SPDES Permitted Facilities
- NPDES Facilities
- NPDES Pipes
- Hazardous Waste Sites
- CERCLIS Sites

Source Water Assessment

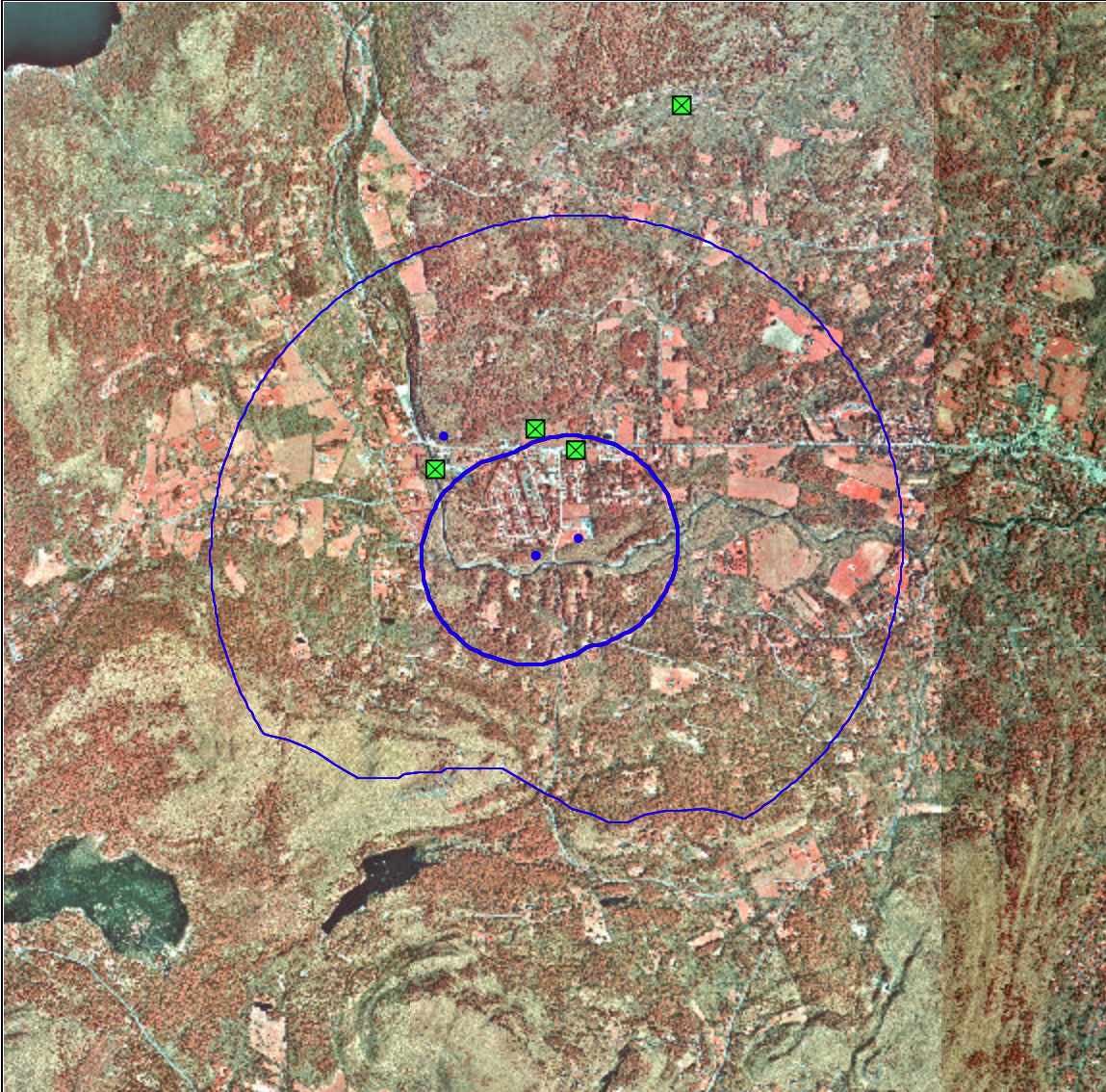
County: Ulster

Public Water System: Woodstock Water District

Municipality: Woodstock

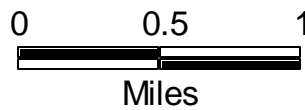
System ID: NY5503394

2003 April 29



Legend: Basemap Data

- × Mines
- ⊕ Oil & Gas Wells
- Petroleum Pipelines
- Color Infrared Orthoimagery



DOH STATE OF NEW YORK
DEPARTMENT OF HEALTH

Legend: Assessment Data

- Public Water Supply Wells
- Inner Assessment Area
- Outer Assessment Area
- Landfills
- Petroleum Bulk Storage
- Chemical Bulk Storage
- Hazardous Substance Spills
- TRI Facilities
- RCRA Facilities
- SPDES Permitted Facilities
- NPDES Facilities
- NPDES Pipes
- Hazardous Waste Sites
- CERCLIS Sites