STATE OF NEW YORK
DEPARTMENT OF HEALTH

Flanigan Square, 547 River Street, Troy, New York 12180-2216

Antonia C. Novello, M.D., M.P.H., Dr.P.H.
Commissioner

Dennis P. Whalen
Executive Deputy Commissioner

April 5, 2005

NY3503549
NEWBURGH CITY
Ms. Jean Ann McGrane - City Manager
CITY OF NEWBURGH
83 BROADWAY
NEWBURGH
NY 12550

Re: Source Water Assessment (SWAP) Report

Dear Ms. Jean Ann McGrane:

A copy of the source water assessment report for your source(s) is enclosed.

Each assessment report includes the following elements

Report: This includes narrative text, results tables, a summary table, and a summary of the contents of the SWAP SDWIS add-on database for your source(s).
Map: This map illustrates the location of your intake(s), the land area draining to your source(s), and potential contaminant sources.
CI List: A list of potential contaminant sources within the delineated assessment area for your source that do not have permitted discharges.
PD list: A list of potential contaminant sources within the delineated assessment area for your source that has permitted discharges.

This report contains an Executive Summary in the narrative text that was used as the basis for creating a SWAP summary for your Annual Water Quality Report (AWQR). A SWAP summary must be included in your AWQR. As a reminder, by May 31, 2005, your AWQR should be distributed to your customers, and must be submitted to the NYS DOH and the Orange County Department of Health. Guidance to assist you in writing your 2005 AWQR is available on our website: http://www.health.state.ny.us/nysdoh/water/annual_water_quality_report.htm.

Please be advised that you are not required to share information from the SWAP report, beyond the summary enclosed in your AQWR, with the general public. However, please feel free to share portions of this report that you do not think pose a security threat to your water supply.

If you have any questions regarding your SWAP report, please contact Mr. Jim Hyde of the NYS DOH at (518) 402-7711 or jbh01@health.state.ny.us.

Sincerely,

Lloyd Wilson, Ph.D.
Section Chief
Source Protection Section

Enclosures

cc: Mr. D. Kirkcaldy - Orange Co. Health Dept.

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2005
NYS DOS "SWAP"
Report of Source Water
Assessment Program

1.0 Executive Summary

The analysis of available information for this source water assessment did not find any significant sources of contamination in this watershed. Statewide and local databases of permitted facilities were used to identify discrete potential sources of contamination. No discrete sources were identified within the assessment area. Land use within the watershed was evaluated by contaminant category to rate the likely prevalence of contamination associated with the various types of land use. The contaminant category ratings for land use types were determined to be medium for microbial contamination due to agricultural practices in the watershed. The overall susceptibility of this watershed to potential sources of contamination was found to be medium for microbial contamination.

2.0 Introduction

This report was completed under the NYS DOH's Source Water Assessment Program (SWAP). The purpose of this program is to compile, organize, and evaluate information regarding possible and actual threats to the quality of public drinking water sources (PWSs). The information contained in assessment reports will assist the State in overseeing public water systems and help local authorities in protecting their source water quality. It is important to note that source water assessment reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished tap water.

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 following steps were performed for each assessment of each drinking water source:

Delineation of the source water assessment area(s) – A topographic watershed border was created defining the land area that contributes water to the drinking water source. In most cases the overall assessment area contains only one zone. However, a second zone was created where flow barriers and/or large geographic distances decrease the likelihood of contaminants in portions of the overall watershed from impacting drinking water quality at the intake. A drinking water source's natural sensitivity ratings are also assigned during the delineation phase. These rating are conceptually based on water body size and flow characteristics, along with general fate and transport characteristics of contaminant categories. Ultimately, natural sensitivity ratings are used along with contaminant prevalence ratings (described below) to define a drinking water source's susceptibility to contamination.

Inventory of Potential Contaminant Sources (PCSs) – This inventory compiles the areal land cover percentages and a listing of specific facilities, (e.g. landfills, Superfund sites) within the assessment area(s). In additions to data on specific facilities, the

contaminant inventory includes SWAP rating values (i.e. Major/Minor/NP ratings). Information contained in contaminant inventories is used to create Contaminant Prevalence ratings in the next step.

Susceptibility Determination – SWAP susceptibility ratings are defined using the drinking water source's sensitivity and contaminant prevalence ratings. Sensitivity is defined using the water body type classification during the delineation phase. Contaminant prevalence values are assigned based on the nature of the potential contaminant sources (i.e. Major/Minor/NP ratings described in Appendix 3) present in the assessment area and the location (Zone1 Vs Zone 2) of these potential contaminant sources relative to the drinking water intake.

3.0 The Watershed

3.1 Delineation and Basic Assessment Area Attributes

The topographic watershed delineation for this drinking water source is presented in Figure 1. Details on the overall SWAP delineation methodology is presented in Appendix 3. Some additional identification information and general watershed information is presented in Table 1.

Ongoing watershed management programs are the best way to identify, understand, manage, and control water quality problems. While the SWAP program is useful in identifying and describing potential threats to drinking water quality, it cannot replace a local watershed management program. It is also important to state that all watershed management programs are not equal, active programs with regulatory authority are generally best at protecting water quality.

Additional information on this water system and sources is contained in the NYS DOH SWAP Database in Appendix 1. The NYS DOH SWAP Database contains information and contamination concerns noted during sanitary surveys of public water systems, and in some cases, information provided by the public water system.

3.2 Watershed SWAP Sensitivity Rating

This drinking water source's water body type (in this case: Small Lake) and SWAP natural sensitivity rating are presented in Table 2.

SWAP natural sensitivity rating are assigned using the table presented in Appendix 3. The rationale for these ratings are based on the size and flow characteristics of the water body types, along with the fate and transport characteristics of the contaminant categories in each contaminant type classification.

Water bodies classified as small lakes are assigned medium natural sensitivity ratings for the microbial, other chemical, and phosphorus contaminant categories. This is due

to the tendency for these contaminant to undergo sedimentation or inactivation in small lakes. The volatile natural of the organic chemicals makes these categories rate low for small lakes.

4.0 Contaminant Inventories and Susceptibility

Once a watershed assessment area for a particular water supply has been delineated and natural sensitivity ratings are assigned, contaminant inventories and contaminant prevalence and susceptibility ratings are created. To simplify these analyses and the presentation of results, these tasks are treated separately for the different types of available data.

The overall contaminant inventory task in the assessment for surface drinking water sources consists of the compilation of land cover and discrete facilities within delineated assessment area(s). First, the percentages of land cover types within the assessment area(s) are calculated. Next, contaminant inventories are created separately for those facilities with permitted discharges (Permitted Discharge PCSs) and other potential contaminant sources (Other GIS PCSs). This distinction was made because facilities with permitted discharges tend to be more important potential sources of contamination for surface waters, and these facilities have more useful information contained in their GIS databases. Additional PCSs are the final category of potential contaminants included in this report. This category includes potential sources of contamination that are depicted as lines in GIS (e.g. roads, pipelines) and those potential sources of contamination in the NYS DOH SWAP Database (or other available data, e.g. AEM data, PWL list, etc) that are not accounted for in the Other GIS PCSs inventories.

In order to simplify the process, and allow for the clear presentation of results, contaminant inventories utilize contaminant categories, rather than individual contaminant names. These contaminant categories are based on similarities in origin, fate and transport in the environment, and consequences in drinking water. The contaminant categories that have been identified as important to surface drinking water sources are presented in the Glossary in Appendix 4.

Once contaminant inventories are compiled, Susceptibility ratings are separately created for each of the above mentioned data types. This is done by first creating contaminant prevalence ratings for each contaminant category based on the types of land cover discrete PCSs present in the assessment area. These values are then used along with natural sensitivity ratings to assign susceptibility ratings for each contaminant category.

4.1 Land Cover

Land cover within the assessment area is inventoried and compiled to calculate contaminant prevalence ratings, and these ratings are used along with the watershed's natural sensitivity ratings to create the drinking water source's susceptibility ratings.

More details on this methodology are presented in the SWAP plan and Appendix 3.

The MRLC data set is used to obtain land cover data in the SWAP. This data set was derived using Landsat images obtained between 1988 and 1993. The images used were primarily collected during the spring leaves-off period, but fall leaves-off images, and various leaves-on images were also used. While this data set is generally considered to be a very good general land cover classification product, some inaccuracies still exist. The major problem with this data set's use in SWAP is that it sometimes does not make accurate distinctions between row crops and pasture.

4.1.1 Contaminant Inventory

Land cover percentages within this assessment area are presented in Table 3. These percentages were compiled using the MRLC land cover data, and specific details on the SWAP Landuse methodology is presented in Appendix 3.

4.1.2 Contaminant Prevalence and Susceptibility

Contaminant prevalence and susceptibility ratings based on land cover are presented in Table 4. Pasture land cover within this watershed results in medium ratings for protozoa

4.2 Discrete Potential Contaminant Sources (PCSs)

The purpose of this section of the SWAP report is to describe and rate potential sources of contamination associated with individual facilities, rather than land cover. Additional PCSs evaluated in this section includes contamination risks listed in the NYS DOH SWAP Database (see Appendix 1), roadways, railways, and pipelines. There are no permitted discharges or other GIS PCSs located in this watershed. However, the DOH SWAP database lists the presence of local roadways in close proximity to the water supply intake.

5.0 Overall Susceptibility Discussion

No discrete sources were identified within the assessment area. Contaminant prevelance ratings for land use types were determined to be medium for microbial contaminants (protozoa). The overall susceptibility of this watershed to potential sources of contamination was found to be medium for microbial contamination.

SUMMARY of SIGNIFICANT FINDINGS		
Potential Sources of Contamination	Potential Impacts to Water Source	Contaminants of Concern
Agricultural Land Cover	Medium	Protozoa

NY3503549	C	NEWBURGH CITY	ORANGE
SMALL LAKE		BROWN'S POND	2571314

NY3503549	C	NEWBURGH CITY	ORANGE
SMALL LAKE		BROWN'S POND	2571314

Table 1: System and Source Information

System Information	
System Name	NEWBURGH CITY
Federal ID	NY3503549
County Served	ORANGE
Source Information	
TINWSF Number	2571314
External System Number	47601
Source Name	BROWN'S POND
Water Body Area (acres)	189.79
	Zone 1 / Zone 2
Watershed Area (sq miles)	1.91
Watershed Area (acres)	1224.89

*-99 means area could not be calculated in GIS

Table 2: Natural Sensitivity Ratings

Waterbody type: SMALL LAKE

Contaminant Types and Categories	Sensitivity Ratings
Organics =	Low
Halogenated Solvents Petroleum Products Other Industrial Organics	
Other Chemicals =	Medium
Pesticides Herbicides Metals Nitrates Sediments Turbidity Disinfection Byproduct Precursors	
Phosphorus =	Medium
Phosphorus	
Microbials =	Medium
Protozoa Enteric Bacteria Enteric Viruses	

Table 3: Land cover Percentages

Land Use Class	Zone 1	Zone 2
Water	16.72932	0
Low Intensity Residential	3.66583	0
High Intensity Residential	0.453632	0
High Intensity Commercial	0.822352	0
Pasture	19.91288	0
Row Crops	1.706421	0
Other Grasses	1.380655	0
Evergreen Forest	4.493051	0
Mixed Forest	37.27906	0
Deciduous Forest	13.55679	0
Woody Wetland	0	0
Emergent Wetland	0	0
Barren; Quarries, Strip Mines, and Gravel Pits	0	0
Barren; Bare Rock and Sand	0	0
Barren; Transitional_including clear cut areas	0	0

NY3503549	C	NEWBURGH CITY	ORANGE
SMALL LAKE		BROWN'S POND	2571314

Table 4: Land Use Susceptibility Analysis Summary

Contaminant Categories	CP Rating	Dominant land cover causing rating Z1	Dominant land cover causing rating Z2	Land cover notes	Susceptibility Rating
Organics					
Halogenated Solvents	LOW				
Petroleum Products	LOW				
Other Industrial Organics	LOW				
Other Chemicals					
Pesticides Herbicides	LOW				
Metals	LOW				
Nitrates	LOW				
Sediments_Turbidit	LOW				
Cations/Anions, Salts, Sulfate	LOW				
DBP Precursors	LOW				
Phosphorus					
Phosphorus	LOW				
Microbials					
Protozoa	MEDIUM	Pasture			MEDIUM
Enteric Bacteria	LOW				
Enteric Viruses	LOW				

NY3503549	C	NEWBURGH CITY	ORANGE
SMALL LAKE		BROWN'S POND	2571314

NY3503549	C	NEWBURGH CITY	ORANGE
SMALL LAKE		BROWN'S POND	2571314

Appendix 1

NYS DOH SWAP Database

I. System Level Info

A. Protection

1. Watershed Rules and Regulations? Yes *Details:* See WR&R

2. Existing Protection Description Watershed Area inspected approx. 72 times/year, plus locked gates on access to intakes

3. Jurisdiction of Source? Limited to areas directly adjacent to reservoirs which are under the ownership of the City of Newburgh

B. Water Quality Concerns

1. Concerns of LHU Yes Washington Lake is surrounded by commercial usages.

2. SWTR/DBP Issues No

3. System Treatment Concerns Yes

4. Significant Public Concern - Water Quality No

5. Significant Public Concern - Contaminants No

C. Other Available Information

1. Currently, all sources for this system flow into Washington Lake which is vulnerable to contamination.

II. Source Information

A. Delineation

1. Delineation Description

2. Zones

3. Date 1/3/2002

4. Intake to Shore 100 *Depth* 16 *Units*

B. Potential Contamination

1. Significant Sum Survey Findings Mt. Airy Rd. is approx. 50' from shore of Brown's pond.
Moores Hill Rd. is approx. 1000' to the intake of Brown's Pond.
Nursery and greenhouses are located in watershed approx. 3500' from intake.

2. Water Quality Concerns No

3. Existing Contaminant Inventory Date 11/20/2002

4. Surface Water Body Influence No *Distance* 5000

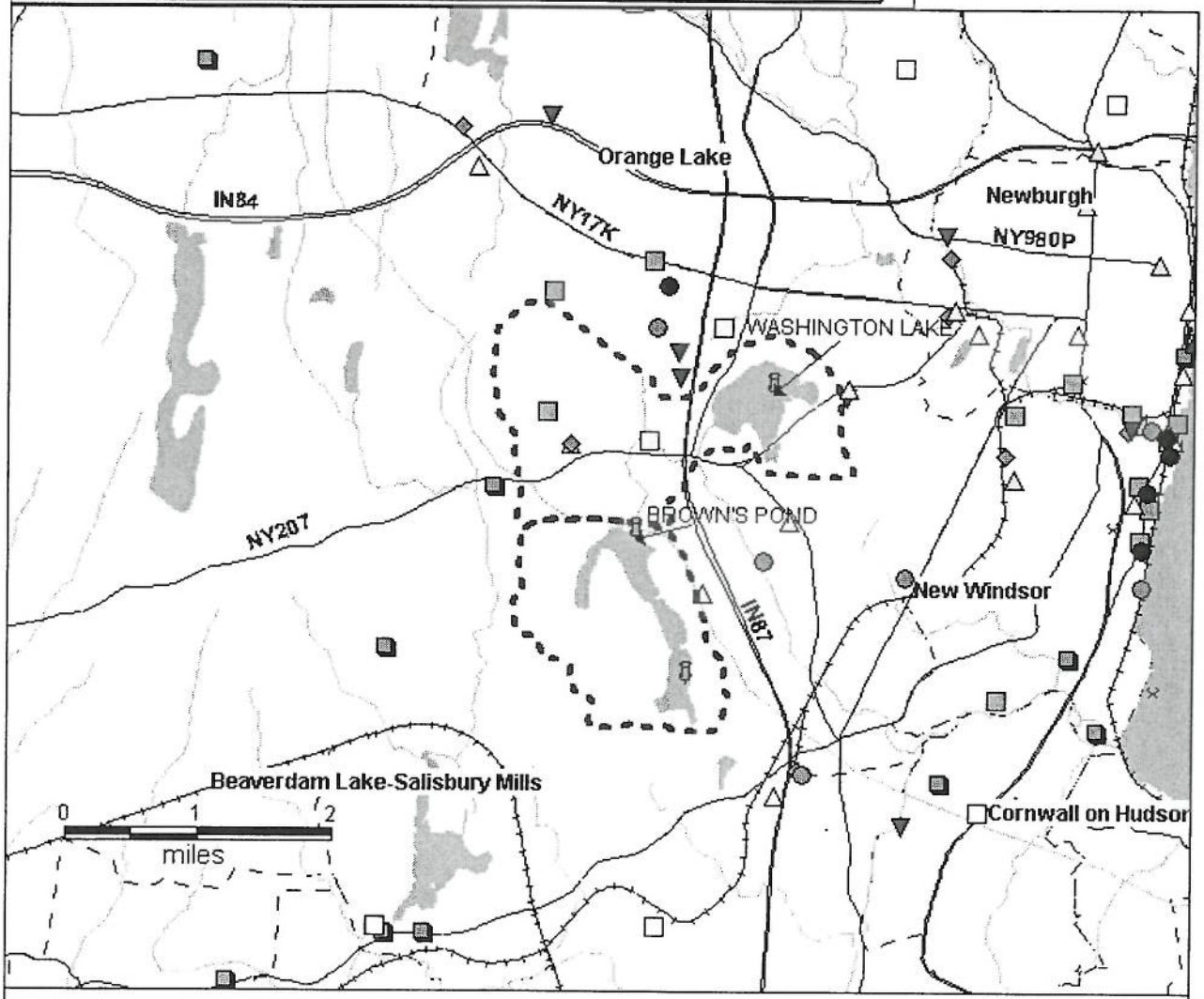
Description Brown's pond is located approx. 5000' from Washington Lake. Brown's Pond currently flows into Washington lake.

5. Waterbody Quality Shallow source susceptible to taste and odor problems

6. Source Structural or Locational Concerns

System_#	System_Name	County_Served
NY3503549	NEWBURGH CITY	ORANGE

Report_ID#	External_#	Source_Name	Waterbody_type
2,571,314	47,601	BROWN'S POND	SMALL LAKE



Railroads

Petroleum Pipelines

Major Roads

Surface Waters

Watersheds

Urban Areas

PWS intake

Permitted Discharge Potential Contaminant Sources

- Surface Water Sanitary Waste Discharge
- Non-Sanitary Waste Discharge
- Groundwater Sanitary Discharge

Other GIS Potential Contaminant Sources

- Chemical Bulk Storage
- Cerclis Sites
- Hazardous Subtance Spills
- Hasardous Waste Sites
- Landfills
- Mines
- Petroleum Bulk Storage
- Oil and Gas Wells
- RCRA facilities
- TRI facilities

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Message
There are no known potential sources of contamination at this point in time

Message
There are no known permitted discharges at this point in time