

## **1.0 Executive Summary**

The Great Lakes' watershed is exceptionally large and too big for a detailed evaluation in the SWAP. General drinking water concerns for public water supplies which use these sources include: storm generated turbidity, wastewater, toxic sediments, shipping related spills, and problems associated with exotic species (e.g. zebra mussels- intake clogging and taste and odor problems). The summary below is based on the analysis of the contaminant inventory compiled for the drainage area deemed most likely to impact drinking water quality at this PWS intake.

This assessment found an elevated susceptibility to contamination for this source of drinking water. The amount of agricultural and residential lands in the assessment area results in elevated potential for microbials, DBP precursors, and pesticides contamination. There is also a high density of sanitary wastewater discharges which results in elevated susceptibility for numerous contaminant categories. Non-sanitary wastewater discharges may also contribute to contamination. There is also considerable contamination susceptibility associated with other discrete contaminant sources, and these facility types include: CBS, IHWS, Landfills, RCRA, and TRI.

## **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 water supply (PWS) sources. 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 potable tap water.

The source water assessment reports are based on reasonably available information, primarily from statewide databases. Although efforts have been made to check each source water assessment report for accuracy, the large scope of this program and the nature of the available data makes the elimination of all errors from these reports nearly impossible.

The following steps were performed for each assessment:

1. Delineation of the source water assessment area(s) – Assessment area borders are created using topography (high points and ridgelines) to define the land area that drains water to each drinking water source. In most cases the assessment area contains only one zone. However, second zones were created where upstream impoundments and/or large geographic distances impede the movement of contaminants toward the PWS source.

Along with creating assessment area borders, all PWS sources are assigned a waterbody type category (e.g. river, spring, large lake, etc) and natural sensitivity ratings for the different contaminant categories. These sensitivity ratings are conceptually based on the waterbody's type, size, and flow characteristics, along with

general fate and transport characteristics of contaminant categories. For example, while rivers can move many contaminants great distances rather quickly, solvents tend to evaporate away as they move downstream. Ultimately, natural sensitivity ratings are used along with contaminant prevalence ratings (described below) to define a drinking water source's susceptibility to contamination.

2. Inventory of Potential Contaminant Sources (PCSs) – This inventory contains areal land cover percentages and a listing of specific facilities and sites, (e.g. landfills, Superfund sites) within the assessment area(s). Information contained in contaminant inventories is used to create Contaminant Prevalence ratings in the next step.

3. Susceptibility Determination – SWAP susceptibility ratings are created using the drinking water source's sensitivity and contaminant prevalence ratings. Sensitivity is defined using the water body type assigned during the delineation step, and contaminant prevalence values are assigned based on the nature of the potential contaminant sources present in the assessment area and the location (i.e. Zone 1 Vs Zone 2) of these potential contaminant sources relative to the drinking water source.

### **3.0 Assessment Area**

#### **3.1 Delineation and Assessment Area Background Information**

The topographic assessment area delineation for this drinking water source is presented on the attached map. Details on the SWAP delineation process are presented in the attached Methods report. Additional PWS source identification and general assessment area information is presented in Table 1.

This assessment area does not include the entire watershed land area which drains to this PWS's intake. This is because the complete watershed is so large, it is not feasible to create a complete contaminant inventory and perform a meaningful analysis of these data. Therefore, this assessment area was created to assess the potential contaminants nearest the PWS intake.

The specific assessment area delineation methodology for the Lake Champlain and the Great Lakes and their major tributaries (Niagara and St. Lawrence Rivers) is based upon choosing the 11 digit HUC and areas of direct drainage (within NYS) which are most likely to impact the PWS intakes. Since detailed hydrologic analyses are beyond the scope of SWAP, assessment areas were based on professional judgment.

It is important to note that the entire Niagara River is on the NYS DEC Priority Waterbody List (NYS Division of Water Waterbody Inventory/Priority Waterbodies List, June, 2004). The narrative for this listing follows: "There is a fish consumption advisory for the entire Niagara River. Above the falls the advisory is to eat no more than one meal per month of carp due to PCB contamination. Below the falls the advisory is to eat none of white perch (due to PCB, Mirex and Dioxin contamination). There is also an advisory on consumption of smallmouth bass (eat no more than one meal per month) due to PCB, Mirex and Dioxin

contamination.

Inactive hazardous waste sites and embayment sediments are known causes of chemical related impairment. Shoreline modification/development has resulted in the loss of habitat.

The Niagara River is subject to a joint US-Canadian Niagara River Toxics Management Plan to reduce toxic contributions to the basin. The river is also an International Joint Commission (IJC) Area of Concern for which a Remedial Action Plan (RAP) has been developed. The RAP recommends continuation and completion of the hazardous waste site remediation program to include identified areas where nearshore embayment sediments have been impacted. Remaining habitat areas are to be identified, preserved and enhanced."

Additional information on this water system and source contained in the NYS DOH SWAP Database is presented in Appendix 1. In addition to information on local protection efforts, the NYS DOH SWAP Database may contains information and contamination concerns pointed out by the public water system or noted during sanitary surveys. Furthermore, the water supplier and/or the local health unit may have additional information not contained in the NYS DOH SWAP database.

### **3.2 Swap Sensitivity Ratings**

This drinking water source's assigned waterbody type and SWAP natural sensitivity ratings are presented in Table 2. These sensitivity ratings are assigned using the table presented in the attached Methods report. 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.

The dominant considerations for defining natural sensitivity ratings for rivers are their relatively shallow depth and high flow rate and directionality. Microbial contaminant categories are rated high for rivers, because some of these contaminants can travel great distance in flowing water with little die-off or sedimentation. The organic and other chemical categories are rated medium, because they tend to show some volatilization and inactivation. The phosphorus category is rated low, because phosphorus does not generally limit algae growth in low residence time (high flow rate) water bodies such as rivers.

### **4.0 Contaminant Inventory and Suseptibility**

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

The overall contaminant inventory task in the assessment for surface drinking water sources consists of the compilation of land cover types (depicted as polygons in GIS) and discrete facilities and sites (depicted as points in GIS) within the 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 Discrete 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. In contrast, the Other Discrete GIS PCS database does not contain much information beyond facility type (e.g. CBS, TRI, etc.). Consequently, susceptibility determinations based on these data are very general, often with susceptibility ratings being assigned to contaminant categories not even associated with PCSs within the assessment area. The final category of PCS in this report is Additional PCSs. This category includes PCSs 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. watershed reports, PWL list, etc.) that are not accounted for in the Other Discrete GIS PCSs inventories.

In order to simplify the SWAP process and allow for the clear presentation of results, contaminant inventories utilize contaminant categories (e.g. petroleum products, halogenated solvents), rather than individual contaminant names. These contaminant categories are based on similarities in origin, chemistry, 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 the attached Methods report.

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 and 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**

The land cover percentages for this assessment are presented in Table 3.

Land cover within the assessment area is inventoried and compiled to calculate contaminant prevalence ratings for each contaminant category, and these ratings are then used along with the watershed's natural sensitivity ratings to create the susceptibility ratings for the drinking water source. More details on this methodology are presented in the SWAP Plan and the attached Methods report.

The National Land Cover Data set (NLCD) 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 using this data set 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 land cover methodology is presented in the attached Methods report.

#### **4.1.2 Contaminant Prevalence and Susceptibility**

Contaminant prevalence and susceptibility ratings based on land cover are presented in Table 4.

Residential and pasture land cover within the assessment area results in elevated susceptibility to Pesticide/herbicides, DBP precursors, and the Microbial categories.

#### **4.1.3 Additional Agriculture (AEM and CAFO) Data**

Data related to the Agricultural Environmental Management Program (AEM) and Confined Animal Feedlot Operations (CAFOs) summarized in Table 5 are used to supplement the SWAP land cover data analysis. Densities are reported in this table as #s (animal units and acres) per 100 square mile, even though most assessment areas are smaller than 100 square miles. These unusual density units are used here to avoid the difficulties in presenting and reading very small decimal numbers (e.g. 0.0475 vs. 4.75).

AEM is a voluntary program designed to assist farmers in conducting an environmental assessment of their operations. Planning and technical guidance are made available to farmers who want to improve the environmental performance of their operations. Since information on specific farms is confidential as prescribed by AEM legislation, only summary data prepared for specific assessment areas are utilized in SWAP.

There are some important considerations when interpreting these data. First, summary AEM data are not available for all assessment areas, because not all counties provided information, and some delineations were not complete in time to be included. Also, not all farms participate in AEM, which means the summary AEM data may not adequately represent overall agriculture activities in some assessment areas. Overall, while this data set does have its limitations, it provides unique information for making assessments and a good starting point for local water quality protection efforts.

The DEC regulates farms engaged in animal husbandry that meet certain size criteria (i.e. large operations) through a permit program. Farms that meet the size criteria are considered CAFOs and are obligated to implement control measures to prevent discharges to water bodies. Since GIS data were not available to SWAP until recently, these facilities and sites are not depicted on assessment area maps and contaminant inventory lists.+

There are no AEM data available for this assessment area, and no CAFOs were found.

## **4.2 Permitted Discharges**

The contaminant inventories for permitted discharges are derived from the DEC's SPDES program (and corresponding GIS layer), and two separate SWAP susceptibility determinations are performed using this data set. The first, more generalized analysis, reports the number of permitted discharges that are associated with each of the different contaminant prevalence and susceptibility ratings for each of the SWAP contaminant categories. The second type of susceptibility determination is strictly for the protozoan contaminant category. It is derived using data from the permitted discharges judged to be sanitary wastewater and estimates of total watershed wastewater and overall water flows.

### **4.2.1 Contaminant Inventory**

The SPDES facilities located in this source's assessment area are displayed in the attached map and PD list.

### **4.2.2 Contaminant Prevalence and Susceptibility**

General SPDES Contaminant Prevalence and Susceptibility ratings are presented on Table 6, and facility counts and densities are presented on Table 7. These ratings are derived using information contained in the DEC's GIS layer via the methodology presented in the SWAP plan and attached Methods report. It is important to note that these ratings are based on all of the contaminant categories that could be present at these facilities and sites, rather than what is actually present. Therefore, it is very likely that additional site specific information on PCSs will reduce the perceived risks to drinking water quality.

This assessment area contains a moderate density of sanitary waste surface water discharges and an elevated density of non-sanitary waste discharges. Both discharge types increase the potential for source water contamination.

### **4.2.3 Cumulative Wastewater Analysis**

The results of the cumulative wastewater analyses are presented in Table 8. The facilities included in these calculations are marked as "SW" in the Wastewater column on the attached PD list.

This analysis of SPDES data evaluates the cumulative potential impact of surface wastewater discharges on a surface water PWS source's susceptibility to contamination by Protozoa (i.e. Cryptosporidium). The basic goals of these

analyses are to first estimate the percentage of water that could be from wastewater effluent under low flow conditions, and then assign susceptibility based on the consequent potential levels of Cryptosporidium in the source water. It is important to note this methodology is rather crude, and these susceptibility ratings could be improved using site specific hydrologic data and more detailed information on specific wastewater facilities.

Unfortunately, these analyses could not be performed for this assessment area. The waterbody and its watershed are too big for this methodology to create meaningful results. A site specific evaluation of potential wastewater on this water source may be beneficial, particularly if a high density of surface wastewater discharges is noted in the section above.

### **4.3 Other GIS PCSs**

The Other Discrete GIS PCSs include a variety of different types of DEC regulated facilities and sites. These facilities and sites include: Toxic Release Inventory (TRI), Landfill, Mines, Inactive Hazardous Waste Site (IHWS), Resources Conservation and Recovery Act (RCRA), Chemical Bulk Storage (CBS), Major Oil Storage Facility (MOSF), Hazardous Substances Emergency Events Surveillance (HSEES), Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS), and Oil/Gas wells. Unlike the SPDES facilities, these facilities and sites do not have regulated discharges to the environment. The potential risks they pose to drinking water quality are associated with accidents and small unregulated releases over time.

#### **4.3.1 Contaminant Inventory**

The Other Discrete GIS PCS facilities and sites located in this source's assessment area are displayed in the attached map and CI list.

#### **4.3.2 Contaminant Prevalence and Susceptibility**

The Other Discrete GIS PCS ratings are presented in Tables 9 and 10. These ratings are derived using the methodology described in the SWAP PLAN and the attached Methods report. It is important to stress, the Other Discrete GIS PCS database generally does not contain information on the chemicals that are actually present at individual sites, and susceptibility ratings are created for all of the contaminant categories potentially released from each particular type of PCS. Therefore, it is likely that additional information on actual risks posed by specific facilities and sites will reduce the assessed threats to drinking water quality.

In order to further describe the risks to drinking water quality, the densities of these discrete PCSs are reported on Table 10. Densities are reported as number per 100 square miles, even though most assessment areas are smaller than 100 square miles. This was done to create meaningful, easy to understand numbers (i.e. without being too many places to the right of the decimal point)

that allow density comparisons between assessment areas. Regardless, additional information on particular PCSs would help to better define risks to drinking water quality.

This assessment area contains one or more Other Discrete GIS PCS facilities in elevated densities. Therefore, Other Discrete GIS PCS facilities may represent an increased potential for source water contamination. The facility types with moderate to extreme densities include: CBS, HSEES, IHWS, Landfills, Oil and gas wells, RCRA, and TRI. The specific contaminants of concern associated with each discrete PCS type are listed on the lower portion of Table 9.

#### **4.4 Additional PCSs**

Additional PCSs includes transportation routes, pipelines and other potential sources of contamination sources listed in the NYS DOH SWAP Database that are not accounted for in above mentioned GIS analyses.

There are no additional PCSs noted for this assessment area and/or the listed PCSs are unlikely to significantly impact source water quality.

#### **5.0 Overall Susceptibility Discussion**

The purpose of this section of the report is to use professional judgment to synthesize the findings of the overall assessment process in order to describe the greatest risk to drinking water quality for this source. The contaminant prevalence and susceptibility ratings presented above are largely the result of automated processes and generalized criteria. Furthermore, additional site specific information or studies would improve this assessment.

The Great Lakes' watershed is exceptionally large and too big for a detailed evaluation in the SWAP. General drinking water concerns for public water supplies which use these sources include: storm generated turbidity, wastewater, toxic sediments, shipping related spills, and problems associated with exotic species (e.g. zebra mussels- intake clogging and taste and odor problems). The summary below is based on the analysis of the contaminant inventory compiled for the drainage area deemed most likely to impact drinking water quality at this PWS intake.

This assessment found an elevated susceptibility to contamination for this source of drinking water. The amount of agricultural and residential lands in the assessment area results in elevated potential for microbials, DBP precursors, and pesticides contamination. There is also a high density of sanitary wastewater discharges which results in elevated susceptibility for numerous contaminant categories. Non-sanitary wastewater discharges may also contribute to contamination. There is also considerable contamination susceptibility associated with other discrete contaminant sources, and these facility types include: CBS, IHWS, Landfills, RCRA, and TRI.

**SUMMARY of SIGNIFICANT FINDINGS**

Potential Sources of Contamination	Potential Impacts to Water Source	Contaminants of Concern
Multiple Other Discrete PCSs	Medium to High	Various
Permitted Discharges	Medium to Very-High	Various
Agricultural Land Cover	Medium to High	Protozoa, DBP precursors, and Pesticides
Residential Land Cover	High	Microbial contaminants

**Table 1: System and Source Information**

System Information	
System Name	NIAGARA FALLS CITY
Federal ID	NY3100568
County Served	NIAGARA
Source Information	
TINWSF Number	2576511
External System Number	53594
Source Name	NIAGARA RIVER--RAW WATER INTAKE
Water Body Area (acres)	-99
	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">Zone 1</div> <div style="border: 1px solid black; padding: 2px;">Zone 2</div> </div>
Watershed Area (sq miles)	292.71
Watershed Area (acres)	187946.24

\*-99 means area could not be calculated in GIS

**Table 2: Natural Sensitivity Ratings**

Waterbody type: RIVER

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

**Table 3: Land cover Percentages**

Land Use Class	Zone 1	Zone 2
Water	0.552673	0
Low Intensity Residential	17.94944	0
High Intensity Residential	5.727317	0
High Intensity Commercial	4.293718	0
Pasture	32.26528	0
Row Crops	10.68965	0
Other Grasses	5.763366	0
Evergreen Forest	0.051570	0
Mixed Forest	4.867294	0
Deciduous Forest	16.79670	0
Woody Wetland	0.391256	0
Emergent Wetland	0.198943	0
Barren; Quarries, Strip Mines, and Gravel Pits	0.452794	0
Barren; Bare Rock and Sand	0	0
Barren; Transitional_including clear cut areas	0	0

**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
<b>Organics</b>					
Halogenated Solvents	LOW				
Petroleum Products	LOW				
Other Industrial Organics	LOW				
<b>Other Chemicals</b>					
Pesticides Herbicides	MEDIUM	Row Crops			MEDIUM
Metals	LOW				
Nitrates	LOW				
Sediments_Turbidit	LOW				
Cations/Anions, Salts, Sulfate	LOW				
DBP Precursors	MEDIUM	Pasture		Also Low Intensity Reside	MEDIUM
<b>Phosphorus</b>					
Phosphorus	MEDIUM	Pasture			LOW
<b>Microbials</b>					
Protozoa	MEDIUM	Pasture			HIGH
Enteric Bacteria	MEDIUM	High Intensity Residential			HIGH
Enteric Viruses	MEDIUM	High Intensity Residential			HIGH

**Table 5: Summerized AEM and CAFO Data\***

\* An absent table means these data are not available for this assessment

Zone	# of CAFOs	CAFO Density per 100 ACRES	Rating
0	1	0.34	Sparse

**Table 6: Number of Permitted Discharge Facilities That Result in Particular Contaminant Prevalence and Susceptibility Ratings**

\* A blank table means none of these facilities were found for this assessment area.

Contaminant Categories	HIGH	MEDIUM	LOW	NEGLIGIBLE	VERY HIGH	HIGH	MEDIUM-HIGH	MEDIUM	LOW	NOTE
	CP Ratings				Susceptibility Ratings					
Halogenated Solvents		64		15				64	15	
Petroleum Products		43		36				43	36	
Other Industrial Organics		43		36				43	36	
Pesticides/Herbicides		24		55				24	55	
Metals		43		36				43	36	
Nitrates		24		55				24	55	
Sediments/Turbidity		24		55				24	55	
Cations/Anions/Salts/Sulfate		24		55				24	55	
DBP Precursors		24		55				24	55	
Phosphorus		24		55					79	
Protozoa	5	64		10	5	64				10
Enteric Bacteria	5	64		10	5	64				10
Enteric Viruses	5	64		10	5	64				10

**Table 7: Permitted Discharges, General SPDES Counts, Densities and Density Ratings**

	Counts		#/100 Square miles		Rating	
	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
Surface WW	24		8.17		Moderate	
Ground WW	10		3.41		Sparse	
non WW	45		15.32		Elevated	

**Table 8: Cumulative Surface Sanitary Wastewater Analysis Results**

\* An absent table means none of these facilities are present or the SWAP methodology does not work for this assessment

**Table 9: Contaminant Prevalence and Susceptibility Ratings for Other GIS PCSs**

\* A blank table means none of these facilities were found for this assessment area.

Potential Contaminant Sources	No. of Facilities	Halogenated Solvents	Petroleum Products	Other Indus Organics	Pesticides/Herbicides	Metals	Nitrates	Sediments/Turbidity	Cations/Anions/ Salts/Sulfate	DBP Precursors	Phosphorus	Protozoa	Enteric Bacteria	Enteric Viruses
<b>CONTAMINANT PREVALENCE RATING</b>														
CBS	69	M	M	M	M	M	M	N	M	M	M	N	N	N
Cerclis	3	M	M	M	M	M	M	M	N	M	M	N	N	N
HSEES	131	N	N	N	N	N	N	N	N	N	N	N	N	N
IHWS	59	M	M	M	M	M	M	M	N	M	M	N	N	N
Landfills	24	M	M	M	M	M	M	M	M	M	M	M	M	M
Mines	25	N	N	N	N	N	N	M	N	N	N	N	N	N
MOSF	8	N	M	M	N	N	N	N	N	N	N	N	N	N
oilgas	499	N	N	N	N	N	N	N	N	N	N	N	N	N
RCRA	55	M	M	M	M	M	M	N	M	N	M	N	N	N
TRI	101	M	M	M	M	M	M	N	M	N	M	N	N	N
<b>SUSCEPTIBILITY RATING</b>														
CBS	69	M	M	M	M	M	M		M	M				
Cerclis	3	M	M	M	M	M	M			M				
HSEES	131													
IHWS	59	M	M	M	M	M	M			M				
Landfills	24	M	M	M	M	M	M	M	M	M		H	H	H
Mines	25							M						
MOSF	8		M	M										
oilgas	499													
RCRA	55	M	M	M	M	M	M		M					
TRI	101	M	M	M	M	M	M		M					

**Table 10: Other Discrete GIS PCS Counts, Densities and Density Ratings**

	Counts		#/100 Sqr Miles		Rating	
	Zone 1	Zone 2	Zone 1	Zone 2	Zone 1	Zone 2
CBS	69		23.50		Elevated	
HSEES	131		44.61		Elevated	
IHWS	59		20.09		Elevated	
landfills	24		8.17		Moderate	
Mines	25		8.51		Moderate	
Oil Gas	499		169.92		Extreme	
RCRA	55		18.73		Elevated	
TRI	101		34.39		Elevated	
MOSF	8		2.72		Sparse	
CERCLIS	3		1.02		Sparse	

# NYS DOH SWAP DATABASE REPORT

## Appendix 1

### NYS DOH SWAP Database

#### I. System Level Info

##### A. Protection

- 1. *Watershed Rules and Regulations?* No      *Details:* Niagara River Source. No WR&R
- 2. *Existing Protection Description*      The East branch of the Niagara River is the source of raw water for the City of Niagara Falls Water Board WTP. Raw water collection is through a concrete intake structure situated near the river bottom, approximately 2,000 feet from shore, midway in the Tonawanda Channel. No local efforts or regulations or any other protective ownership. No watershed management plan. Designated an Area of Concern (AOC) under SEQR. No Agricultural Environmental Management efforts. Niagara River Remedial Action (RAP) Plan completed.
- 3. *Jurisdiction of Source?*      Permits issued for construction of the intake structure. No ownership of the Niagara River, an international boundary.

##### B. Water Quality Concerns

- 1. *Concerns of LHU*      Yes      Details of contamination threats contained in the supply's Vulnerability Assessment on file with NYSDOH.
- 2. *SWTR/DBP Issues*      Yes      Cryptosporidium and Giardia monitoring conducted with negative results. Minimal algae problems. TTHM's and HAA5's monitoring on a reduced schedule with RAA below guidelines. Source TOC levels low, SUVA levels satisfactory, and alkalinity levels are consistent.
- 3. *System Treatment Concerns*      Yes
- 4. *Significant Public Concern - Water Quality*      Yes
- 5. *Significant Public Concern - Contaminants*      Yes

##### C. Other Available Information

- 1. Niagara River Remedial Action Plan (RAP) completed and on file with NCDOH and DEC.

#### II. Source Information

##### A. Delineation

- 1. *Delineation Description*      The local U.S. watershed of the Niagara River, which is included in the 'Niagara River Remediation Plan' has a drainage basin area of approximately 1,225 square miles. The entire drainage basin of the upstream Great Lakes System, an area of approximately 263,700 square miles, drains into the Niagara River. The river is an international border with an average flow along its 37 mile length of approximately 200,00 cubic feet per minute. The 'Niagara River Remedial Action Plan' is available at the NYS Department of Environmental Conservation offices.
- 2. *Zones*
- 3. *Date*      3/1/1993
- 4. *Intake to Shore*      2000      *Depth*      14      *Units*

##### B. Potential Contamination

- 1. *Significant Sum Survey Findings*      Four DEC inactive hazardous waste sites exist within the 2,500 feet intake buffer zone. Roadway Inn/LaSalle Yacht Club # 932086; Buffalo Avenue site # 932080;

NY3100568 C NIAGARA FALLS CITY NIAGARA  
RIVER NIAGARA RIVER--RAW WATER INTAKE 2576511

Occidental Chemical Co. S Area # 9320199; and The Robrt Moses Parkway # 932057. Date of contaminate inventory varies per site.

**2. Water Quality Concerns** No

**3. Existing Contaminant Inventory Date** 12/11/2003

**4. Surface Water Body Influence** Yes **Distance** 8500

**Description** Smokes Creek with a drainage area of 33 square miles and average flow of 46 cfs. Buffalo River with a drainage basin of 446 square miles and an average flow of 365 cfs. Scajaquada Creek with a drainage basin of 29 miles and average flow of 32 cfs. Two Mile Creek with a drainage basin of 7 square miles and an average flow of 10 cfs. Tonawanda Creek with a drainage basin of 635 square miles and average flow of 522 cfs. Cayuga Creek with a drainage basin of 28 square miles and an average flow of 39 cfs. Gill Creek with a drainage area of 14 square miles and an average flow of 20 cfs.

**5. Waterbody Quality** Raw water quality is excellent. Raw water turbidity is consistently less than 2 NTU. However, turbidity spikes up to 80 NTU can occur during major storm events. Monthly alkalinity results over the last five years range from 87.0 mg/l to 101 mg/l.

**6. Source Structural or Locational Concerns** Integrity of intake structure, which was constructed in, 1996 is excellent. Recreational boating during summer months occurs in the area of the intake. No known wildlife problems.