SOURCE WATER ASSESSMENT PROJECT:

An Assessment of Potential for Pollution of Surface Drinking Water Supply Sources

Prepared by the Atlanta Regional Commission for

Cherokee County Water & Sewerage Authority
and
City of Canton Water & Sewer Department

DECEMBER 2001

(This page intentionally left blank.)

Table of Contents

(This page intentionally left blank.)

Overview of Source Water Assessment

INTRODUCTION

Federal Requirements Background

The 1996 Amendments to the Federal Safe Drinking Water Act (SDWA) brought about new pollution prevention and protection measures to help ensure clean and safe drinking water. As a result, the U.S. Environmental Protection Agency (USEPA) has set a national goal that by 2005, the majority of the population is to receive its drinking water from systems with Source Water Protection Plans in place. The initial step in the development of the Plan is to prepare an inventory and assessment of each water supply watershed in the State. This step is the Source Water Assessment Project (SWAP).

The Georgia Environmental Protection Division (GA EPD) contracted with the Atlanta Regional Commission (ARC) to coordinate and complete Drinking Water Assessment Plans for 28 Metro Atlanta public drinking water intakes. The goals of this project include:

1. Delineating the water supply watershed for each drinking water intake,
2. Developing an inventory of potential sources of contamination,
3. Determining the susceptibility of drinking water sources to identified potential sources of contamination, and
4. Increasing public involvement in and awareness of drinking water watershed concerns.

Determination of Assessment Areas. Watersheds were delineated by ARC staff using USGS topographic maps and then digitized using GIS software. Once the watersheds were delineated, the assessment areas or zones were determined using the GA EPD criteria. The Inner Management Zone (IMZ) extends to seven miles upstream from the intake. This area requires the most stringent inventory and analysis of Potential Pollutant Sources. The Outer Management Zone (OMZ) extends from the boundary of the IMZ to twenty miles upstream of the intake. In this area, the GA EPD guidance requires fewer facilities be identified and analyzed. Outside of the OMZ is the Non-Management Zone (NMZ). The NMZ is the remainder of the watershed beyond the twenty mile OMZ delineated boundary (the Metro Atlanta Source Water Assessment applied the IMZ criteria for identification, analysis and inventory to the entire watershed area).

Potential Pollutant Source Inventory. This assessment focuses on finished water contaminants regulated under the SDWA for groundwater and surface water, contaminants regulated under the Surface Water Treatment Rule and the microorganism *Cryptosporidium*. These contaminants include fecal coliform (as an indicator), nitrate, nitrite, ammonium nitrate, suspended sediment, volatile organic chemicals (VOCs), synthetic organic chemicals (SOCs), inorganic chemicals (IOCs), iron, manganese, copper, and nutrients. A list of potential pollutant sources was developed using the GA EPD's implementation plan, task force and local utility input,

and EPA guidance documentation available on the Internet at http://www.epa.gov/safewater/swp/sources1.html. Appendix A lists all of the potential pollutant sources identified in the contaminant source inventory.

Individual Sources. To identify potential individual sources of pollution, ARC reviewed state and federal regulatory programs which issue permits to these facilities. From these data sets, all occurrences of facilities within the watershed were mapped and analyzed. In addition to this process, ARC conducted field surveys and identified facilities not listed in the reviewed data sets. Appendix B lists the data sources from which facility information was obtained.

Non-Point Source. Estimates of percent impervious surface were used to identify the potential impact of non-point sources of pollution on the drinking water intake. Impervious surface area was assigned according to land use category throughout the watershed. In addition, other factors considered as non-point sources included land in transition (exposed soil), percent of watershed sewered and non-sewered, number of sewer pipelines over 10" in diameter crossing streams within the IMZ, number of roads and railroads crossing streams, and major transportation corridors.

Susceptibility Determination

Drinking water intakes are susceptible to two different types of pollution – individual sources and non-point sources. Individual sources of pollution involve actual facilities, which have contaminants on-site and can pose a potential health risk if humans consume those contaminants. Non-point source pollution is caused by development and everyday activities that take place in residential, commercial, and rural areas and is carried by stormwater runoff to streams and lakes. Non-point source pollutants include sediment, bacteria, heavy metals, oil and grease, herbicides and pesticides, nutrients, and temperature increases.

Individual Source Susceptibility Determination. In order to determine the potential degree of risk of the potential pollutant sources, the GA EPD's criteria for susceptibility ranking was used. First, all facilities were ranked as either high, medium or low for potential sources of pollution. This ranking is based on the potential of contaminant release and the potential risk to the surface water intake. The factors considered in ranking the potential for release are distance from surface water, volume of release, duration of release and ease of transport/travel. The factors considered for risk are: distance to intake and toxicity. Both potential and risk are ranked individually and then the two scores are combined to get an overall facility ranking using the GA EPD designated matrix (Figure 1). Release potential and risk were assigned ranks based on the facility type represented by each potential pollutant source, supplemental information provided by local water systems, and information provided from GA EPD databases and accidental spill reports.

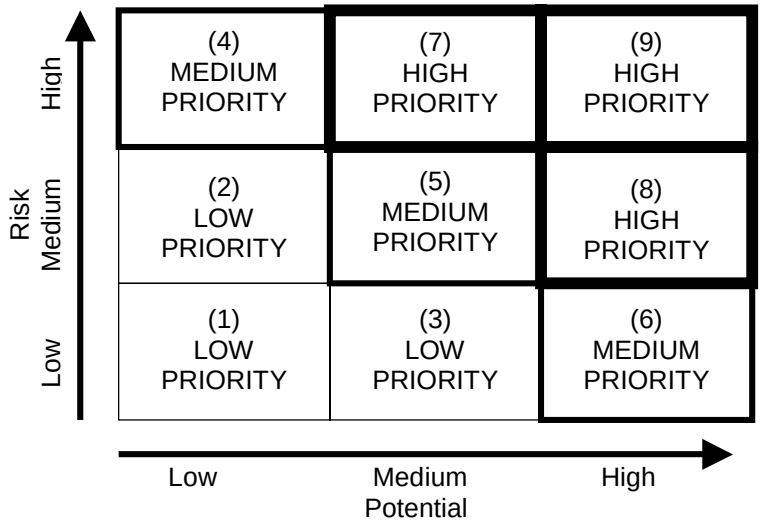


Figure 1. Individual Source Susceptibility Determination

After all of the sources are charted on the matrix, the overall watershed is ranked for the individual source susceptibility as follows:

High Susceptibility	40% or more of the sources chart in grid squares 7,8, and 9
Medium Susceptibility	20% or less of the sources chart in grid squares 7, 8 and 9 **AND** 40% or more of the sources chart in grid squares 4, 5, and 6
Low Susceptibility	20% or less of the sources chart in grid squares 7,8, and 9 **AND** 20% or less of the sources chart in grid squares 4,5, and 6

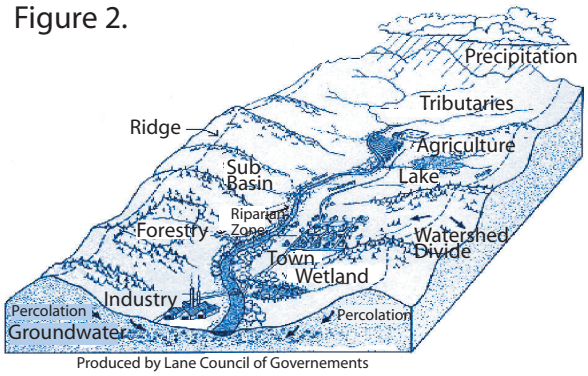
Non-Point Source Susceptibility Determination. To evaluate non-point source pollution in the watersheds, an estimate of impervious surface area was calculated based on land use categories. Impervious surfaces collect and accumulate pollutants deposited from a variety of sources including: dust and dirt form the air, leaks from vehicles, animal wastes, yard pesticides and fertilizers, leaky sewer lines and construction and barren soil areas. During storms, accumulated pollutants are quickly washed off, and are rapidly delivered to rivers and lakes. According to the Center for Watershed Protection, studies have consistently indicated that urban pollutant loads are directly related to the amount of impervious surface in the watershed.

Overall non-point source susceptibility was determined based on percentage of impervious surface in the watershed. For this project, greater than 20% impervious surface area was ranked high, between 10-20% was ranked as medium and less than 10% was ranked low susceptibility. Other factors considered in the non-point source susceptibility ranking included land in transition (exposed soil), percent of watershed sewered and non-sewered, number of sewer pipelines over 10" diameter crossing streams within the IMZ, number of roads and railroads crossing streams, and major transportation corridors.

(This page intentionally left blank.)

DESCRIPTION OF THE CHEROKEE COUNTY AND THE CITY OF CANTON WATER SYSTEMS

Figure 2.



A watershed is the area of land that drains into a river, stream or lake (Figure 2).

Source water is untreated water from streams, rivers, or lakes, which is used to supply public drinking water. In Cherokee County and its municipalities, surface water serves more than 120,000 people.

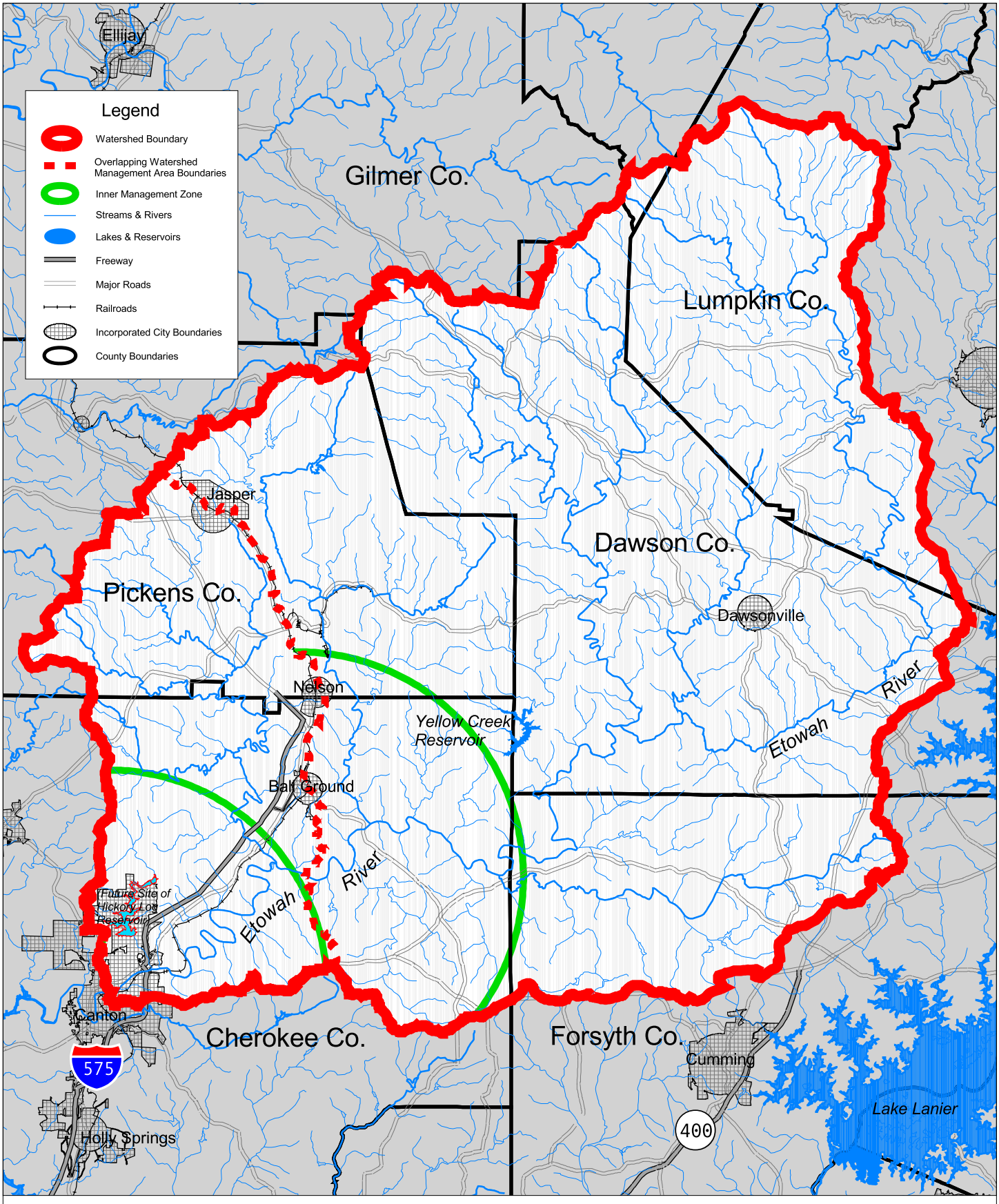
Cherokee County Water & Sewerage Authority. The Cherokee County Water & Sewerage Authority primarily provides retail service to the unincorporated areas of the county and wholesales to the jurisdictions of Canton, Holly Springs, Woodstock, Ball Ground, Waleska, Jasper, and Bartow County, Pickens County, and Forsyth County.

Due to the arrangement of the distribution system, the Authority also purchases some water from the City of Canton to serve some of its customers. The Cherokee County Water & Sewerage Authority has a surface water permit to withdraw water from the Etowah River. Cherokee County Water & Sewerage Authority also operates the Yellow Creek Reservoir as a drought contingency source.

City of Canton Water & Sewer Department. The City of Canton has a surface water permit to withdraw from the Etowah River. The City of Canton also wholesales water to Cherokee County Water & Sewerage Authority as well as the City of Holly Springs, and Waleska. The City of Canton Water & Sewer Department are in the development stages of constructing a drought contingency reservoir on Hickory Log Creek.

Etowah River

Hollis Lathem Reservoir on Yellow Creek



City of Canton Water & Sewer Department &
Cherokee County Water & Sewerage Authority
Etowah River Water Supply Watershed

Figure 3

RESULTS OF CHEROKEE COUNTY WATER & SEWERAGE AUTHORITY ETOWAH RIVER INTAKE DRINKING WATER SOURCE ASSESSMENT

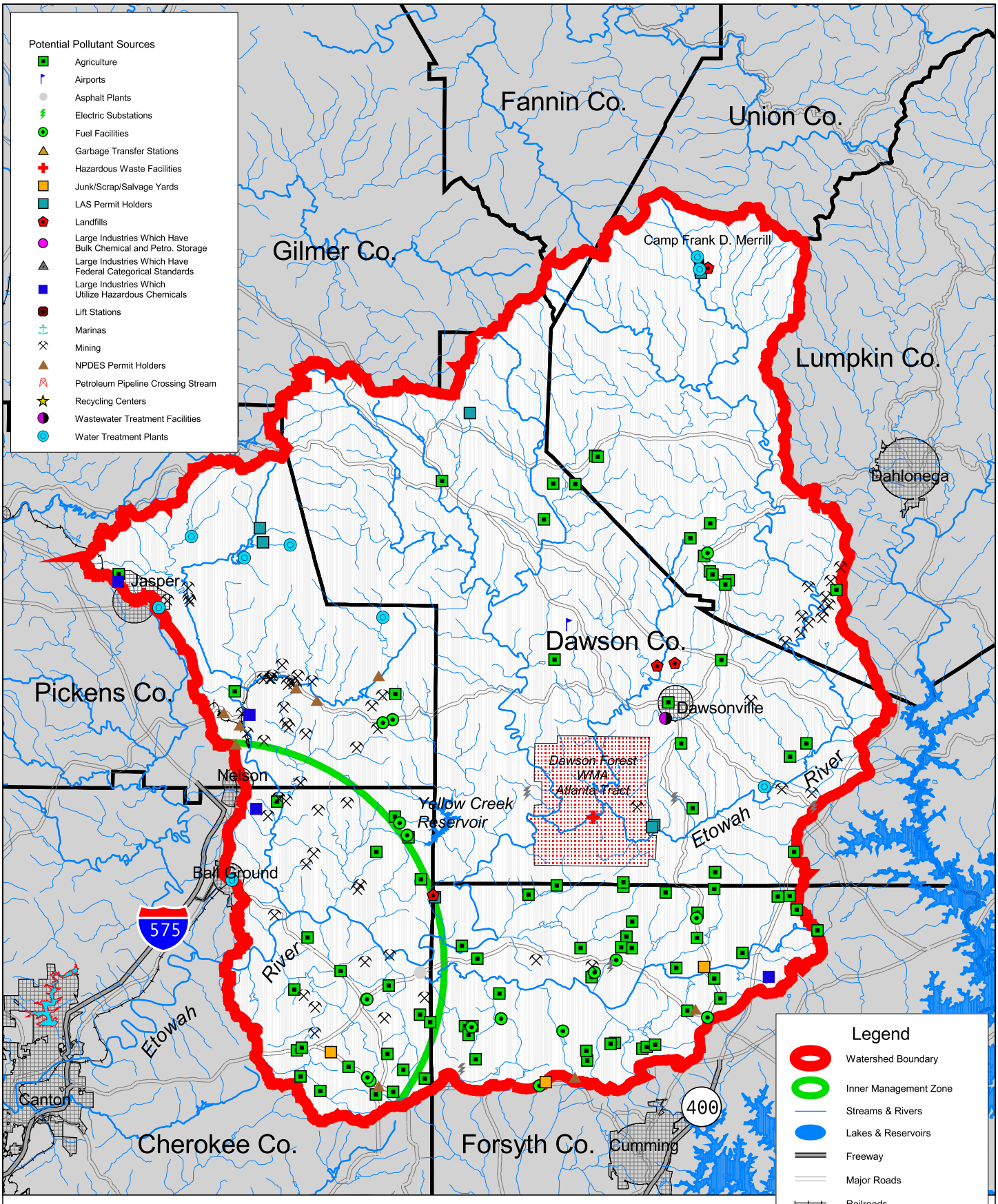
Watershed Description
The Cherokee County Etowah River Water Supply Intake is located approximately 70.7 river miles downstream of the headwaters of the Etowah River. The watershed has a 501-square mile drainage area.

Downstream of the intake, the Etowah River feeds into Allatoona Lake. The watershed crosses several counties and jurisdictions. The counties include Fannin, Union, Gilmer, Lumpkin, Dawson, Pickens, Cherokee, and Forsyth. The watershed also contains portions of the municipalities of the Jasper, Nelson, Ball Ground, and Dawsonville (Figure 3).

Susceptibility Determination
Individual Source. The Etowah River Watershed has 210 facilities included in the inventory of potential individual sources. Table 1 lists the type and number of facilities within the watershed. These facilities are shown on Figure 4.

Table 1. Inventory of Potential Individual Sources of Pollution

Potential Pollutant Source Facilities	Number of Facilities
Agriculture	85
Airports	2
Asphalt Plants	1
Electric Substations	5
Fuel Facilities	17
Hazardous Waste Facilities	2
Junk/Scrap/Salvage Yards	3
Landfills	4
Large Industries which Utilize Hazardous Chemicals	4
Land Application Site (LAS) Permit Holders	7
Mines	61
NPDES Permit Holders	9
Water Treatment Plants	9
Wastewater Treatment Facilities	1
Total	210



Potential Individual Sources of Pollution
Cherokee County Water & Sewerage Authority
Etowah River Water Supply Watershed

Figure 4

Potential pollutant source rankings for each facility were assigned based on the GA EPD's criteria. The following chart (Figure 5) summarizes the results of the individual source ranking.

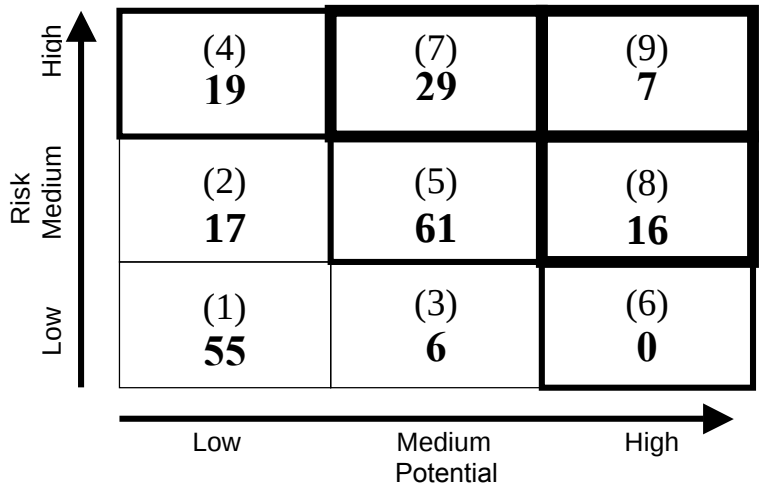


Figure 5. Etowah River Individual Source Susceptibility

With 25% in the high category, 38% in the medium category and 37% in the low category, this watershed fits somewhere between a high and medium susceptibility rank.

Non-point Source. Land use in the Etowah River Watershed is predominately Open/Forest or Agricultural Cropland (Figure 6). The total impervious surface for the watershed is not available at this time due to the lack of data in the upper part of this watershed. Available data covering the lower portion of the watershed shows an impervious surface area of 3.1%, which equates to a low susceptibility rank (Table 2). This portion of the watershed is the most developed area and therefore is likely a conservative estimate of impervious surface area for the entire watershed. This portion of the watershed has 0.5% of the area "in transition" or exposed soil. There are 11 railroads crossing streams within the IMZ and there are no large sewer lines over 10". Approximately 1% of the watershed is sewered (Figure 7). The overall non-point source susceptibility ranking is therefore Low.

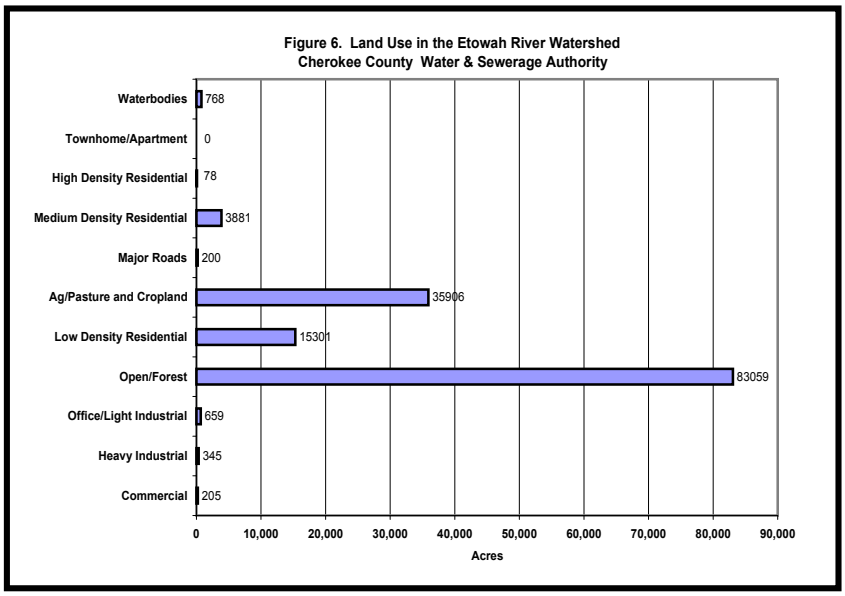


Table 2. Impervious Surface Area in the Etowah Watershed (partial)

Land Cover Classification	Acres in Watershed	Impervious Coefficient	Impervious Area (Acres)	% of Watershed
Agricultural Land/Golf Courses/Parks	35,906	0.5%	180	28.7%
Commercial	205	85%	174	0.2%
Heavy Industrial/Utilities	345	80%	276	0.3%
Major Roads	200	90%	180	0.2%
Office/Light Industrial	659	70%	461	0.5%
Open/Forested	83,059	0.5%	415	66.4%
Residential				
High Density	78	26%	20	0.1%
Medium Density	3,881	19%	737	3.1%
Low Density	78	10%	1,530	0.1%
Townhome/Apartment	0	48%		
Waterbodies	768	0%	0	0.6%
TOTAL	**125,179**		**3,973**	

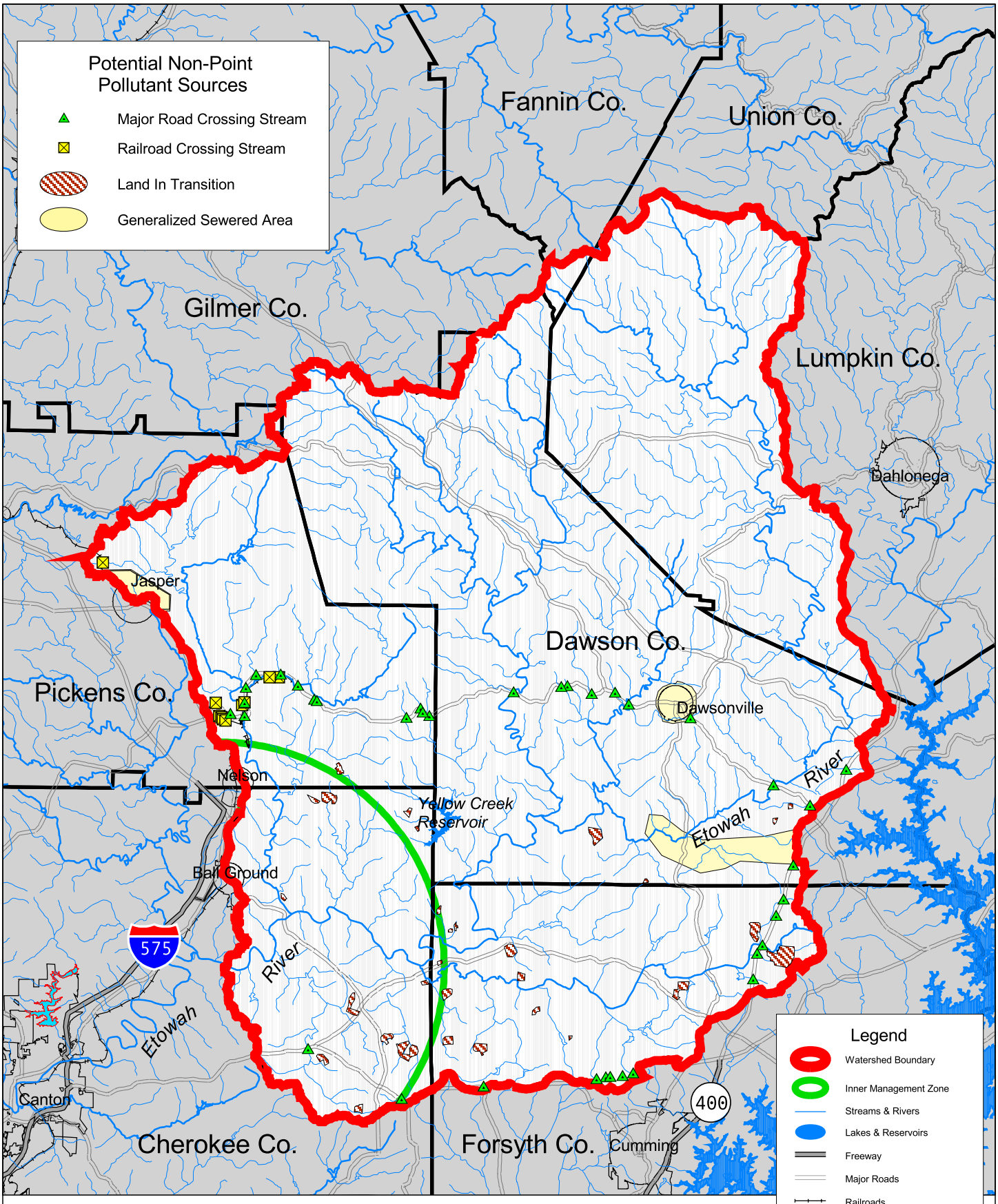
Combining the individual and non-point source rankings gives an overall susceptibility ranking of MEDIUM.

Although the drinking water intake ranks medium susceptibility to potential pollution, water quality reports (Appendix C) for the Cherokee County Water & Sewerage Authority drinking water show no violations in water quality.

Watershed Issues

Accidental Spills. Accidental spills were reviewed for each watershed. These spills represent non-point source pollution within developed areas. The spill data was also referred to when evaluating the susceptibility criteria in the individual source analysis. Four sources of data were used to collect information on accidental spills within the watershed. The four programs are the Hazardous Site Response Program, the Water Quality Branch, the Emergency Response Program, and EPD enforcement actions. All of the data sources include spills reported from 1997-2000 to GA EPD.

Within the Atlanta Region, approximately 5619 accidental spills were reported. Of these spills, approximately 36% or 2029 were mappable. Due to the nature of the spill reporting, it is difficult to use the available data. Also, this data does not represent the total number of spills within a watershed. Within this watershed there are 14 identifiable accidental spill sites (Figure 8). These spills cover a wide range from the type of substance to the volume of substance spilled. The majority of the spills included relatively small amounts of gasoline and motor oil, and sewage spills.



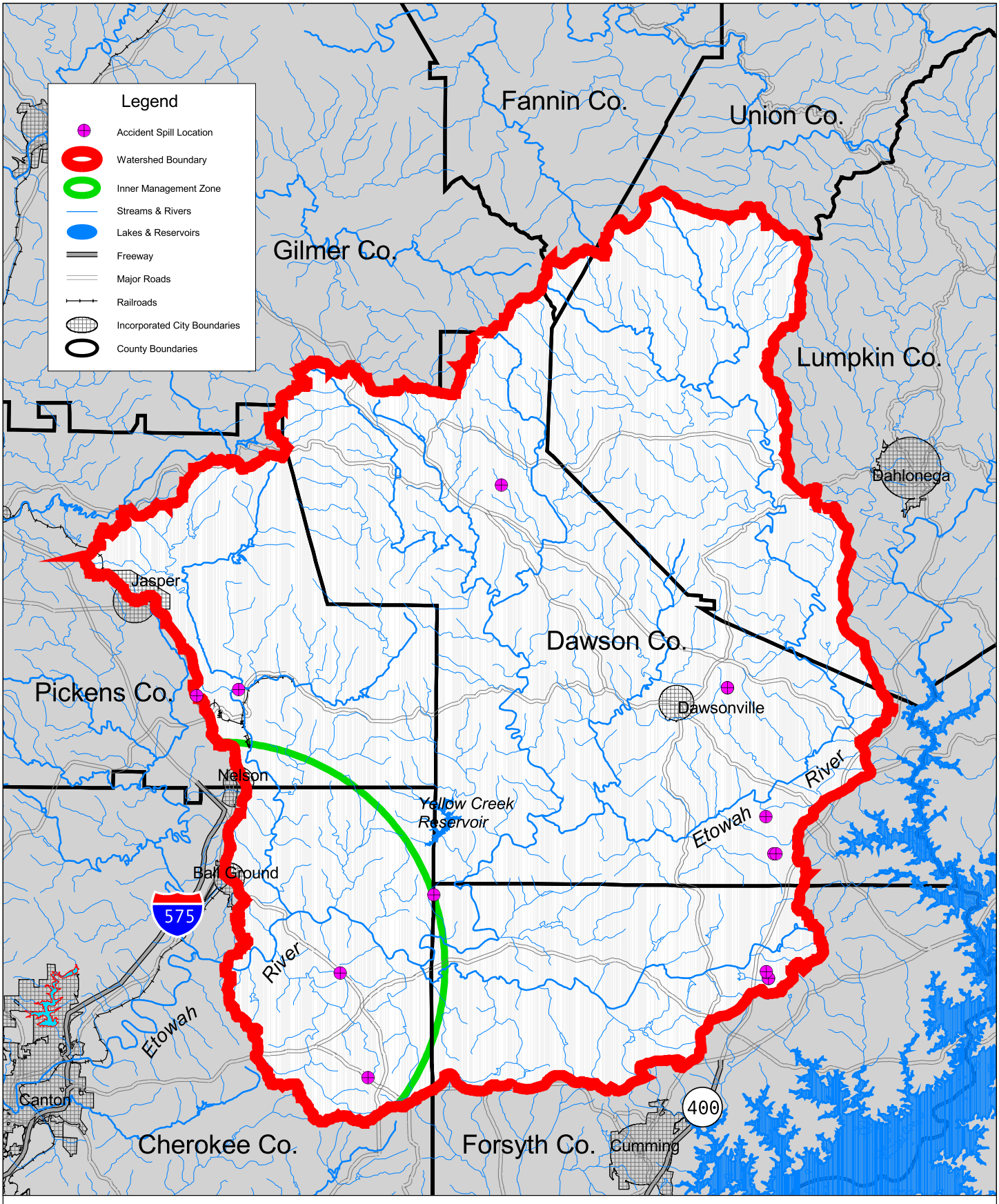
Potential Non-Point Sources of Pollution
Cherokee County Water & Sewerage Authority
Etowah River Water Supply Watershed

Figure 7

Sediment and Erosion. In this watershed, development is increasing at a high rate. Large amounts of sediment can reach waters during construction or when land has been cleared of vegetation. Consequently, erosion and sediment control on exposed sites is an important area of a watershed management program for water quality protection. A combination of clearing restrictions, erosion prevention, and sediment controls, coupled with a diligent plan review and strict construction enforcement are needed to help mitigate these impacts.

Railroads. Railroads also pose a threat to drinking water in the event of a spill. Within the Etowah River watershed there are several areas where the railroad crosses over a stream with 11 crossings in the IMZ.

Agriculture. The Etowah River Watershed contains a large number of poultry farms. Due to the nature of the contaminant and the lack of regulation, these facilities are considered a potentially higher risk to the drinking water.



Accident Spill Locations
Cherokee County Water & Sewerage Authority
Etowah River Water Supply Watershed

Figure 8

(This page intentionally left blank.)

RESULTS OF THE CITY OF CANTON WATER & SEWER DEPARTMENT ETOWAH RIVER INTAKE DRINKING WATER SOURCE ASSESSMENT

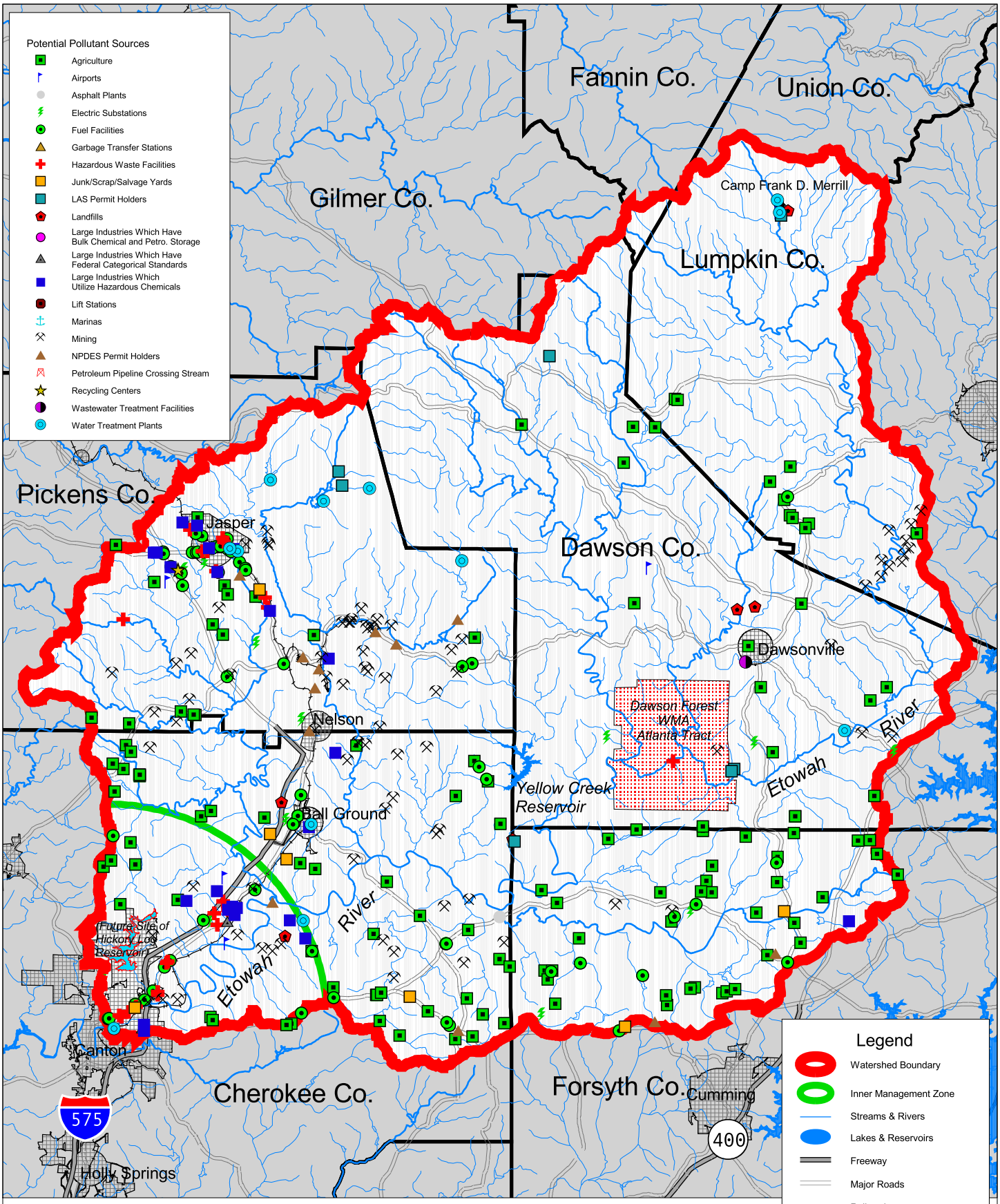
Watershed Description
The City of Canton Water Supply Intake is located approximately 85.1 river miles downstream of the headwaters of the Etowah River. The watershed has a 613-square mile drainage area.

Downstream of the intake, the Etowah River feeds into Allatoona Lake. The watershed crosses several counties and jurisdictions. The counties include Fannin, Union, Gilmer, Lumpkin, Dawson, Pickens, Cherokee, and Forsyth. The watershed also contains the municipalities of the Canton Jasper, Nelson, Ball Ground, and Dawsonville (Figure 3).

Susceptibility Determination
Individual Source. Etowah River Watershed has 382 facilities included in the inventory of potential individual sources. Table 3 lists the type and number of facilities within the watershed. These facilities are shown in figure 9.

Table 3. Inventory of Potential Individual Sources of Pollution

Potential Pollutant Source Facilities	Number of Facilities
Agriculture	126
Airports	5
Asphalt Plants	2
Electric Substations	11
Fuel Facilities	61
Hazardous Waste Facilities	24
Junk/Scrap/Salvage Yards	7
Landfills	6
Large Industries which have Federal Categorical Standards	3
Large Industries which Utilize Hazardous Chemicals	23
Land Application Site (LAS) Permit Holders	7
Mines	81
NPDES Permit Holders	12
Recycling Centers	1
Water Treatment Plants	12
Wastewater Treatment Facilities	1
Total	382



Potential Individual Sources of Pollution
City of Canton Water & Sewer Department
Etowah River Water Supply Watershed

Figure 9

Potential pollutant source rankings for each facility were assigned based on the GA EPD's criteria. The following chart (Figure 10) summarizes the results of the individual source ranking.

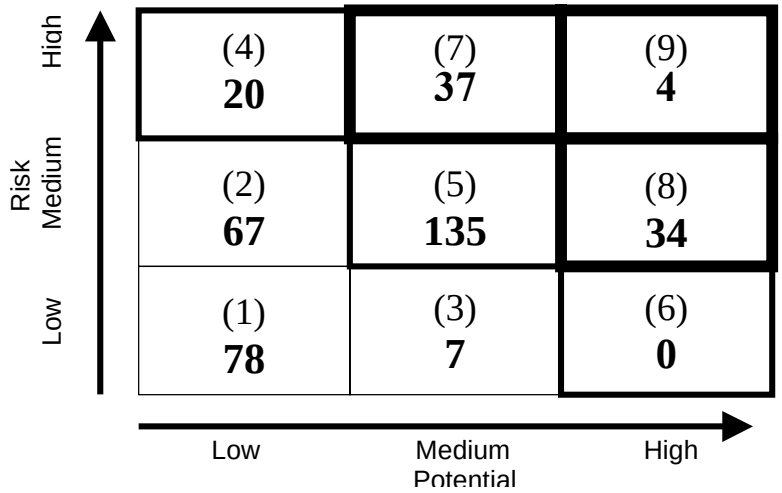
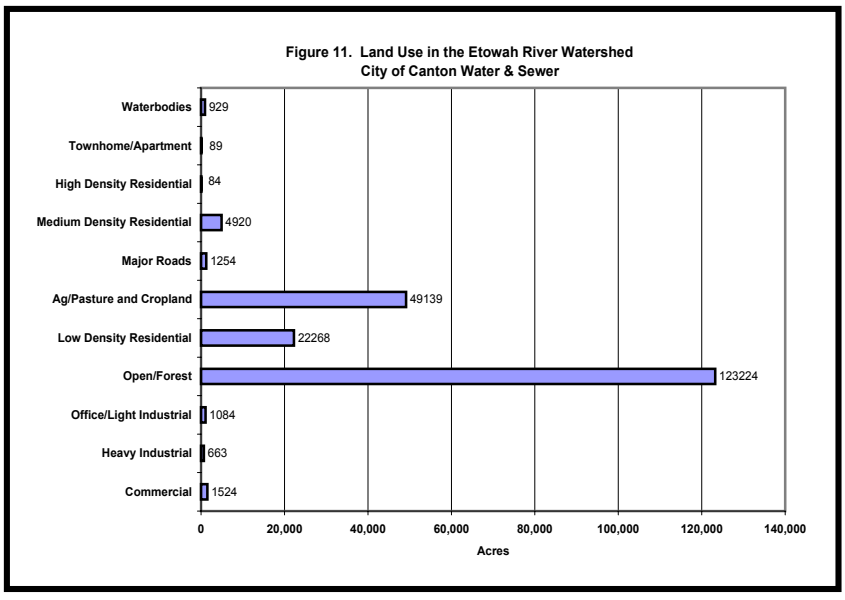


Figure 10. Etowah River Individual Source Susceptibility

With 20% in the high category, 40% in the medium category and 40% in the low category, this watershed ranks as medium susceptibility.

Non-point Source. Land use in the Etowah River Watershed is predominately Open/Forest or Agricultural Cropland (Figure 11). The total impervious surface for the watershed is not available at this time due to the lack of data in the upper part of the watershed. Available data covering the lower portion of the watershed shows an impervious surface area of 3.8%, which equates to a low susceptibility rank (Table 4). This portion of the watershed is the most developed area and therefore is likely a conservative estimate of impervious surface area for the entire watershed. This portion of the watershed has 0.5% of the area "in transition" or exposed soil. There are 26 railroads crossing streams within the IMZ and there are no large sewer lines over 10". Approximately 1% of the watershed is sewered (Figure 12). A review of the Georgia Department of Natural Resources list of impaired waterways (Georgia 2000)



shows 1 segment in violation of water quality standards. The major cause of impairment was urban runoff. A list of the stream segments is included in Appendix D. The overall non-point source susceptibility ranking is therefore Low.

Table 4. Impervious Surface Area in the Etowah Watershed (partial)

Land Cover Classification	Acres in Watershed	Impervious Coefficient	Impervious Area (Acres)	% of Watershed
Agricultural Land/Golf Courses/Parks	49,139	0.5%	246	23.9%
Commercial	1,524	85%	1,295	0.7%
Heavy Industrial/Utilities	663	80%	531	0.3%
Major Roads	1,254	90%	1,128	0.6%
Office/Light Industrial	1,084	70%	759	0.5%
Open/Forested	123,224	0.5%	616	60.1%
Residential				
High Density	84	26%	22	0.0%
Medium Density	4,920	19%	935	2.4%
Low Density	22,268	10%	2,227	10.9%
Townhome/Apartment	89	48%	43	0.0%
Waterbodies	929	0%	0	0.5%
TOTAL	**205,178**		**7,802**	

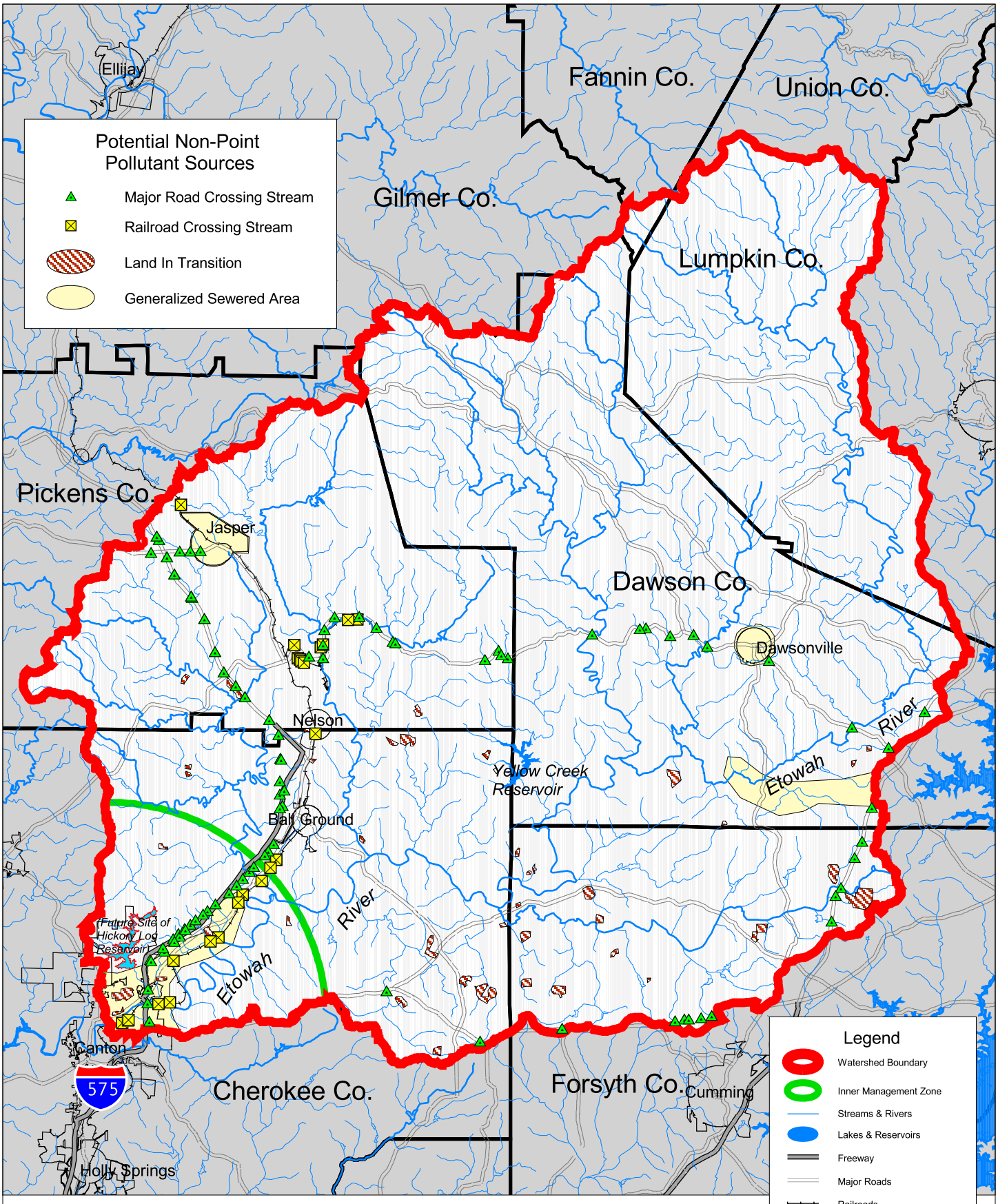
Combining the individual and non-point source rankings gives an overall susceptibility ranking of MEDIUM.

Although the drinking water intake ranks medium susceptibility to potential pollution, water quality reports (Appendix D) for the City of Canton Water & Sewer Department drinking water show no violations in water quality.

Watershed Issues

Accidental Spills. Accidental spills were reviewed for each watershed. These spills represent non-point source pollution within developed areas. The spill data was also referred to when evaluating the susceptibility criteria in the individual source analysis. Four sources of data were used to collect information on accidental spills within the watershed. The four programs are the Hazardous Site Response Program, the Water Quality Branch, the Emergency Response Program, and EPD enforcement actions. All of the data sources include spills reported from 1997-2000 to GA EPD.

Within the Atlanta Region, approximately 5619 accidental spills were reported. Of these spills, approximately 36% or 2029 were mappable. Due to the nature of the spill reporting, it is difficult to use the available data. Also, this data does not represent the total number of spills within a watershed. Within this watershed there are 29 identifiable accidental spill sites (Figure 13). These spills cover a wide range from the type of



Potential Non-Point Sources of Pollution
City of Canton Water & Sewer Department
Etowah River Water Supply Watershed

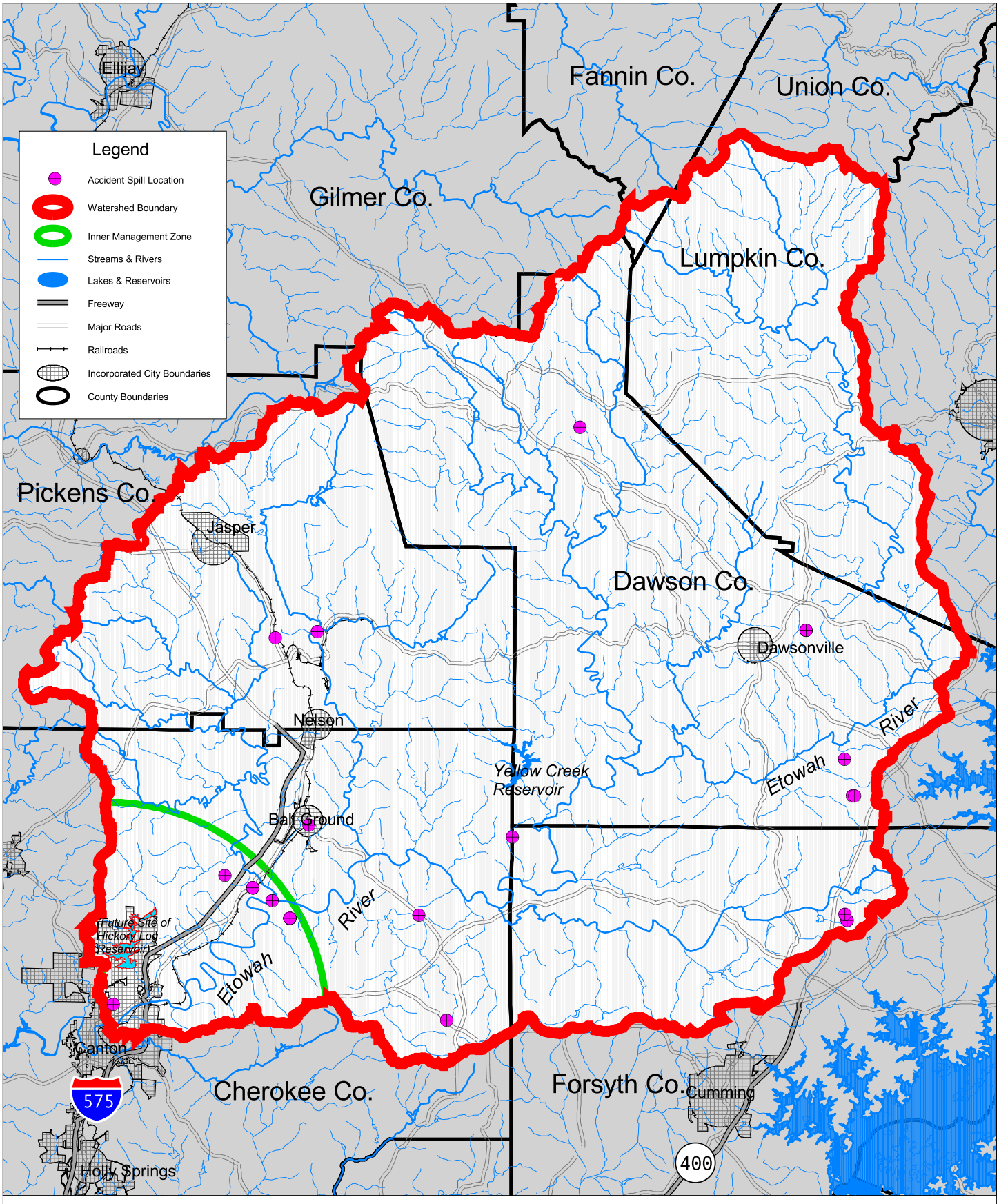
Figure 12

substance to the volume of substance spilled. The majority of the spills included relatively small amounts of gasoline and motor oil, and sewage spills.

Sediment and Erosion. In this watershed, development is increasing at a high rate. Large amounts of sediment can reach waters during construction or when land has been cleared of vegetation. Consequently, erosion and sediment control on exposed sites is an important area of a watershed management program for water quality protection. A combination of clearing restrictions, erosion prevention, and sediment controls, coupled with a diligent plan review and strict construction enforcement are needed to help mitigate these impacts.

Railroads. Railroads also pose a threat to drinking water in the event of a spill. Within the Etowah River watershed there are several areas where the railroad crosses over a stream with 26 crossings in the IMZ.

Agriculture. The Etowah River Watershed contains a large number of poultry farms. Due to the nature of the contaminant and the lack of regulation, these facilities are considered a potentially higher risk to the drinking water.



Accident Spill Locations
City of Canton Water & Sewer Department
Etowah River Water Supply Watershed

Figure 13

(This page intentionally left blank.)

Appendix A. Potential Pollutant Sources

- Accident Spill Locations
- Agriculture
  - Waste Lagoons
  - Confined Animal Feedlots
- Airports
- Asphalt Plants
- Construction Sites
- Garbage Transfer Stations
- Fueling Facilities
- Hazardous Waste Facilities
- Junk/Scrap/Salvage Yards
- Landfills (opened and closed)
- Industries which have Bulk Chemical and Petroleum Storage
  - Petroleum Bulk Stations and Terminals
  - Chemical Bulk Stations and Terminals
  - Paint, Varnish
  - Farm Supplies
- Large Industries which have Federal Categorical Standards
  - Aluminum Forming
  - Battery Manufacturing
  - Builder's Paper and Board Mills
  - Carbon Black Manufacturing
  - Coil Coating
  - Copper Forming
  - Electrical and Electronics Components
  - Electroplating
  - Feedlots
  - Fertilizer Manufacturing
  - Glass Manufacturing
  - Grain Mills
  - Ink Formulating
  - Inorganic Chemicals Manufacturing
  - Iron and Steel Manufacturing
  - Leather Tanning and Finishing
  - Metal Finishing
  - Metal Moulding and Casting
  - Nonferrous Metals Forming and Metal Powders
  - Nonferrous Metals Manufacturing
  - Organic Chemicals, Plastics, Synthetics, and Fibers
  - Paint Formulating
  - Paving and Roofing Materials
  - Pesticide Chemicals
  - Petroleum Refining
  - Pharmaceutical Manufacturing
  - Porcelain Enameling
  - Pulp, Paper and Paperboard
  - Rubber Manufacturing
  - Soap and Detergent Manufacturing
  - Steam Electric Power Generating
  - Timber Products Processing
- Large Industries which Utilize Hazardous Chemicals
  - Auto Supplies
  - Food and Kindred Products
  - Tobacco Products
  - Textile Products
  - Lumber and Wood Products
  - Furniture and Fixtures
  - Paint and Other Coatings
  - Paper and Allied Products
  - Printing and Publishing
  - Chemicals and Allied Products
  - Petroleum and Coal Products
  - Rubber and Misc. Plastics Production
  - Leather and Leather Products
  - Stone, Clay and Glass Products
  - Primary Metal Industries
  - Fabricated Metal Products
  - Industrial Machinery and Equipment
  - Electronic and Other Electric Equipment
  - Transportation Equipment
  - Instruments and Related Products
  - Misc. Manufacturing Industries
- LAS Permit Holders
- Lift Stations
- Marinas
- Military Bases
- Mining
- National Pollutant Discharge Elimination System (NPDES) Permit Holders
  - Municipal
  - Industrial
  - Private
- Oil/Gas Pipelines
- Power Plants and Electric Substations
- Railways Adjacent /Crossing Streams
- Recycling Centers
- Roads Adjacent /Crossing Streams
- Sewer Areas and Non-sewer Areas
- Sewer Pipelines Adjacent /Crossing Streams
- Transportation Corridors
- Wastewater Plants
- Water Plants

(This page intentionally left blank.)

Appendix B. Potential Pollutant Source Database Sources

- GA EPD Hazardous Site Inventory
- Georgia Emergency Response Program
- GA EPD wastewater enforcement actions
- Georgia Department of Agriculture
- USGS Mineral Industry Location System
- GA EPD Air Quality Branch
- GA EPD Underground Storage Tank Program
- GA EPD Solid Waste Management Program
- GA EPD Permitting Compliance and Enforcement Branch
- National Pipeline Mapping System
- National Pollutant Discharge Elimination System (NPDES) Permitting Program
- Resource Conservation and Recovery Act Information System (RCRIS)
- Emergency Planning and Community Right to Know Act (EPCRA) Database
- Permit Compliance System (PCS)
- Toxic Release Inventory (TRI)
- Atlanta Region Information System (ARIS)
- Georgia GIS Clearinghouse
- Georgia Department of Agriculture databases
- BigBook.com Online Business Directory

(This page intentionally left blank.)

Appendix C. Consumer Confidence Report for Cherokee County Water & Sewerage Authority

(This page intentionally left blank.)

CHEROKEE COUNTY WATER & SEWERAGE AUTHORITY
2000 WATER QUALITY REPORT

Water Quality Surpasses All Standards

Cherokee County Water and Sewerage Authority is proud of the fine drinking water it provides. This **annual water quality report** shows the source of our water, lists the results of our tests, and contains much important information about water and health. Cherokee County Water and Sewerage Authority will notify you immediately if there is any reason for concern about our water. We are happy to show you how we have surpassed water quality standards.

We are proud to report that the Cherokee County Water and Sewerage Authority's drinking water meets or surpasses all federal and state drinking water standards.

We encourage public interest and participation in our community's decisions affecting drinking water. Regular Board Meetings are held monthly at 391 West Main Street, Canton, Georgia.

Health Information

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk . More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Water Sources

Cherokee County Water and Sewerage Authority is supplied by surface water from the Etowah River and Lake Allatoona.

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health. Some people may be more vulnerable to contaminants in drinking water than is the general population.

Immuno- compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/ AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline (800) 426-4791.

An Explanation of the Water Quality Data Table

The table shows the results of our water quality analyses. Every regulated contaminant that we detected in the water, even in the most minute traces, is listed here. This table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health, the amount detected, the usual sources of such contamination, footnotes explaining our findings, and a key to units of measurement. Definitions of MCL and MCLG are important.

- Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG's as feasible using the best available treatment technology.
- Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
- Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirement that a water system must follow.
-

Key To Table: AL=Action Level; MCL=Maximum Contaminant Level; MCLG = Maximum Contaminant Level Goal; MFL = Million Fibers per Liter; NTU=Nephelometric Turbidity Units; mrem/year = millirems per year (a measure of radiation absorbed by the body); pci/l=picocuries per liter (a measure of radioactivity); ppm = parts per million, or milligrams per liter (mg/l); ppt=parts per trillion, or nanograms per liter; ppb=parts per billion, or micrograms per liter (µg/l); ppq = parts per quadrillion, or picograms per liter; and TT=Treatment Technique.

Contaminant	Date Tested	Unit	MCL	MCLG	Detected Level	Range	Major Sources	Violation
Inorganic Contaminants								
Copper(1)	8/2/00	ppm	AL=1.3	1.3	0.12	.025-.14	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.	NO
Floride(2)	2/15/00	ppm	4.00	4.00	1.05	N/A	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.	NO

Lead(3)	8/2/00	ppb	AL=15	0	6	0-5.2	Corrosion of household plumbing systems; Erosion of natural deposits.	NO
Nitrate	3/22/00	ppm	10	10	1.39	N/A	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	NO
Microbiological Contaminants								
Turbidity(4)	1/29/00	NTU	TT	N/A	0.61 NTU 99.7%	N/A	Soil runoff.	NO
Volatile Organic Contaminants								
TTHM's (Total Trihalomethanes)	2000	ppb	100	N/A	44.12	22.3-35	By-product of drinking water disinfection.	NO

Water Quality Data Table Footnotes

(1) No sites exceeded the Action Level (AL). (2) Fluoride is added to the drinking water to help in the prevention of dental cavities (caries) in children. (3) Of the 30 sites tested, 0 exceeded the Action Level (AL). (4) Turbidity is the measure of the cloudiness of the water. We monitor because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfectants. Although we ran many tests, only the listed substances were found. They are all below the MCL required.

Explanation of Violations

Duration:
Health Effects:
Action Taken:
Although we ran many tests, only the listed substances were found. They are all below the MCL required.

Unregulated Contaminants

Cherokee County Water and Sewerage Authority did not test for Radon.

Additional Information

For more information, call Dwight Turner at the Cherokee County Water and Sewerage Authority at (770) 479-1813.

Water Quality Data for community water systems throughout the United States is available at www.waterdata.com.

Learn more about the Cherokee County Water and Sewerage Authority water system at www.ccwsa.com (this site).

(This page intentionally left blank.)

Appendix D. Water Quality Impaired Streams in the City of Canton Water and Sewer Department's Water Supply Watershed

(This page intentionally left blank.)

The following is a tabulated year 2000 list of impaired waterways submitted by the Georgia Department of Natural Resources to the EPA.

Georgia 305b Report
City of Canton

Stream	Location	Criterion Violated	Potential Causes	Actions to Alleviate
Etowah River	Sharp Mountain Creek to Lake Allatoona	Copper, Fish Consumption Guidelines	Non-Point Sources	EPD will address nonpoint sources through a watershed protection strategy.

(This page intentionally left blank.)

Appendix E. Consumer Confidence Report for City of Canton Water & Sewer Department

(This page intentionally left blank.)

CITY OF CANTON
ANNUAL WATER QUALITY REPORT
2001

The City of Canton owns the Bobby E. Bishop Water Treatment Facility located at 150 Bobby E. Bishop Drive, Canton, Ga. 30114. About 4 years ago the City engaged the services of Optech, Inc, a private contractor to oversee the day to day operations of the City's distribution system and facilities. In an effort to keep our citizens up to date on the condition of our drinking water, we have compiled this report as a snapshot of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to EPA and state standards. We are committed to providing you with information because informed customers are our best allies.

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Your water is taken directly from the Etowah River and is treated and filtered to remove several contaminants, plus the water is chlorinated to disinfect against viruses and bacteria. Fluoride is added to enhance dental protection. The levels of these two additives are monitored daily to ensure proper dosages are being added. Canton also purchases water from the Cherokee Water and Sewer Authority in amounts less than 5% of the total water sold. The Authority's source for water is also the Etowah River.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

Contaminants that may be present in source water before we treat it include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

- *Inorganic contaminants*, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

- *Pesticides and herbicides*, which may come from a variety of sources such as agriculture and residential uses.

- *Radioactive contaminants*, which are naturally-occurring.

- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbe contaminants are available from the **Safe Drinking Water Hotline (800-426-4791)**.

In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. We treat our water according to EPA's regulations. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

The table below lists all the drinking water contaminants that were detected during the 2000 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing performed January 1 – December 31, 2000.

Substance Detected	MCL	MCLG	Level Detected in Canton's water	Range	Violation?	Likely Source(s)
Turbidity (NTU)	TT = 5 NTU	NA	Max = 0.83 NTU	NA	No	Soil runoff
	TT = 95% of samples < 0.5 NTU		Lowest = 98% of samples < 0.5 NTU			

Turbidity is a measure of the cloudiness of water and is a good indicator of water quality.
TT = Treatment Technique = a required process intended to reduce the level of a contaminant in drinking water.
NTU = Nephelometric Turbidity Unit.

Substance Detected	MCL	MCLG	Level Detected in Canton's water	Range	Violation?	Likely Source(s)
Copper (ppm)[1]	AL = 1.3	1.3	0.28	NA	No	Corrosion of household plumbing systems
Fluoride (ppm)	4	4	1.28	0.47-1.28	No	Water Additive which promotes strong teeth
Lead (ppb)[2]	AL = 15	0	5.28	NA	No	Corrosion of household plumbing systems

Nitrate (ppm)	10	10	0.28	NA	No	Runoff from fertilizer; leaching from septic tanks, sewage; erosion
Haloacetic Acids (HAA5) (ppb)	NA	NA	25.3	20.3 - 30	No	By-product of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb)	100	NA	15.6	10.9 - 21.8	No	By-product of drinking water disinfection

[1] No sites exceeded the Action Level (AL)
[2] Only 1 site out of 19 sites tested exceeded the Action Level (AL).

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

ppm: parts per million (or milligrams per liter which corresponds to one penny in $10,000)

ppb: parts per billion (or micrograms per liter which corresponds to one penny in $10,000,000)

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

The City of Canton Water & Sewer Committee normally meets on the third Thursday of each month at 5:00 PM in the conference room at City Hall. These meetings are open to the public, so please feel free to attend. For more information about your water, please call Don Bowdin at 770-479-2392.