



# NATURAL RESOURCES

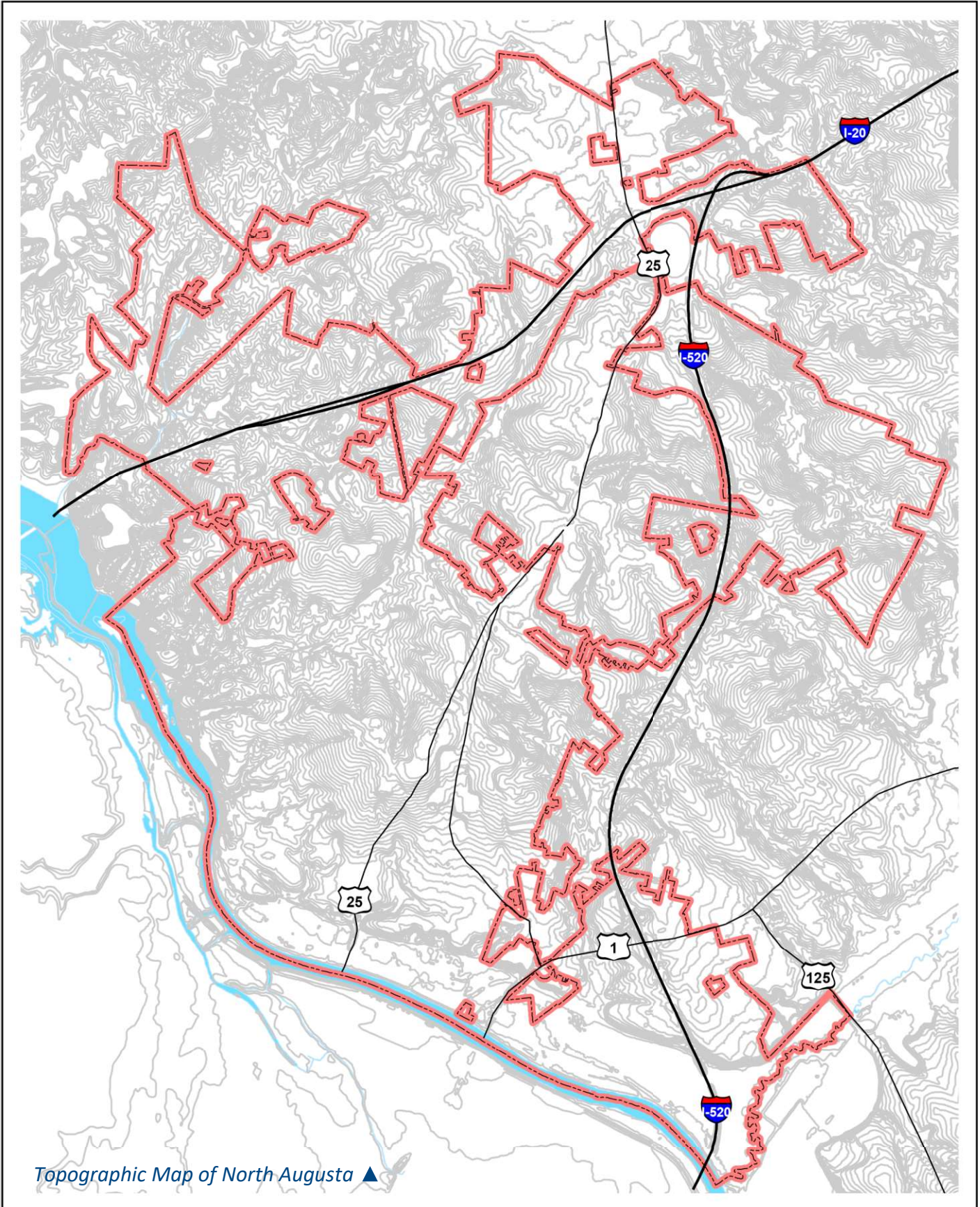
## **NORTH AUGUSTA'S ENVIRONMENT**

North Augusta contains various natural landscapes including deciduous, evergreen, and mixed forests, shrub and grassland, permanent and ephemeral wetlands, streams, and the Savannah River. Protecting and maintaining the City's natural resources is important to the health and wellbeing of the citizens of North Augusta. The City's natural resources are affected by various natural elements, including climate. Changes in climate can alter various water resources, such as wetlands, by affecting their hydroperiod and ultimately changing the habitat altogether. The natural resources element of the Comprehensive Plan also focuses on other environmental factors such as topography, soil characteristics, conservation areas, forestland, endangered species and water resources.

### **Geography and Topography**

North Augusta is located in western Aiken County in central South Carolina adjacent to the Savannah River. Adjoining counties include Richmond and Columbia in Georgia to the south and west, and Edgefield County, South Carolina to the north. A substantial area of unincorporated Aiken County lies to the east and southeast. North Augusta is approximately 67 miles west of Columbia, the South Carolina state capitol, and 150 miles east of Atlanta, the Georgia state capitol.

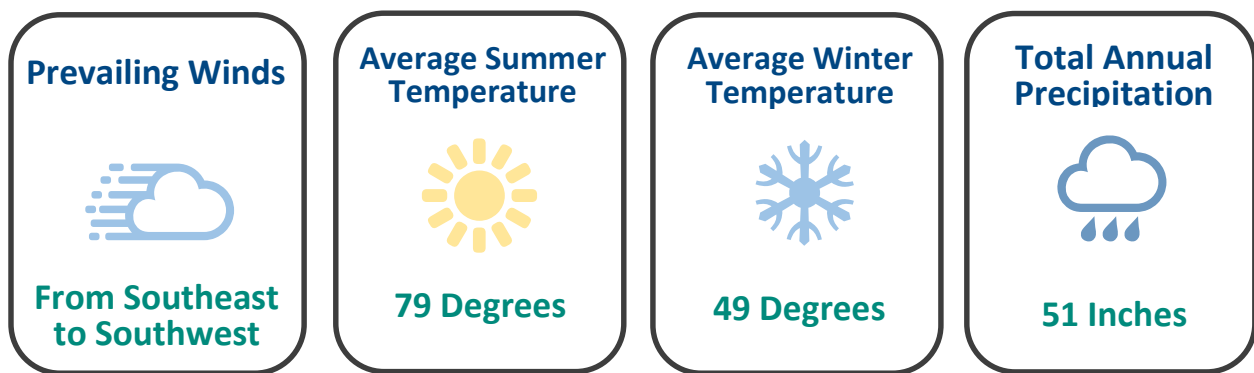
North Augusta and Aiken County are located on the "fall line," a geologic boundary following the Appalachian Mountain Range from Alabama to New York. In South Carolina the "fall line" transition area separates the piedmont from the coastal plain topographic regions. Elevations range from 125 to 550 feet above sea level. In general, the area is comprised of flat terrain and gently rolling hills with slopes ranging from zero to 20 percent.



Topographic Map of North Augusta ▲

## Climate

North Augusta's climate consists of warm summers, averaging a high of 89 degrees and low of 69 degrees. July is the warmest month with an average high of 92.3 degrees and a mean temperature of 82 degrees. Winters in the City average 49 degrees throughout the day, with an average high of 61 degrees and an average low of 37 degrees. Over the past century, average temperature trends have increased by about 0.4 degrees in the winter and 2.3 degrees in the summer, with an overall average increase of 1.1 degrees. On average, the City receives approximately 51 inches of rainfall annually. Over the past 110 years, the average amount of rainfall has increased by approximately 9 inches annually.



## Soils

The City of North Augusta is comprised of roughly 40 soil types as described by the US Department of Agriculture. The most common soil type throughout the city is of the Vacluse-Ailey Complex. This complex consists of Vacluse and Ailey soils and has a surface layer that primarily consists of loamy sand, which consists of little organic matter and is slow draining. The second most common soil type in the City is Troup sand with 6 to 10 percent slopes. This is a well-drained soil suited for urban development.

## Agriculture and Forest Land

Today, the City of North Augusta consists primarily of developed and forested land. Deciduous, evergreen, and mixed forests make up approximately 35 percent of all land within City limits. However, since 2010, the percentage of forested land has decreased by approximately 7.6 percent. Although much of what is now within the North Augusta City limits was farmed, today, very little land within the City is utilized for agricultural purposes. Currently, approximately 1 percent of all land within City limits is used for growing a variety of crops, while approximately 4 percent consists of grass and pasture, which could be utilized for agricultural purposes. Since 2010, the City has seen a 12.5 percent increase in non-agricultural land.

### Endangered Species

Relict Trillium (*Trillium reliquum*), an herbaceous member of the lily family, is listed as an endangered species in Georgia and South Carolina and is on the federal endangered species list. It exists within and adjacent to Riverview Park and on several riverfront parcels that are privately owned. There have been additional findings of Relict Trillium in other parts of the city north of I-20 and Bergen Road, specifically northeast of the Bergen Place development.

Bottlebrush Buckeye (*Aesculus parviflora*) is a wide spreading shrub native to South Carolina. It is currently listed as a Regional Species of Concern by the South Carolina Department of Natural Resources. A protected population is located in the Savannah River Bluffs Heritage Preserve. The native habitat is river banks, bluffs and wooded hillsides in the piedmont and coastal plain of the state.

The Rocky Shoals Spider Lily (*Hymenocallis coronaria*) is a perennial native to South Carolina, Georgia and Alabama. Also known as the shoals spider lily and cahaba lily, it is found in major streams and rivers in rocky shoals and in cracks of exposed bedrock. The Savannah River is a habitat of the rare flowering plant. The Rocky Shoals Spider Lily is listed as an endangered species in Georgia and as a species of concern in South Carolina. It has been proposed federal endangered species status.

All projects that require or utilize a direct federal approval, permit, grant, loan or loan guarantee must comply with provisions of the Endangered Species Act including consultation with the U.S. Department of the Interior to avoid adverse impacts on endangered species. Properties proposed for such permits or approvals are surveyed and evaluated for threatened and endangered species, especially Relict Trillium.

### Conservation Areas & Open Space

The City of North Augusta and the planning area include several conservation, recreation and natural areas. The original plan for the city, prepared by Charles Boeckh, represented some of the best characteristics of the City Beautiful Movement in city planning and included the preservation of natural open space, steeply contoured land and natural drainage ways as parkland. The “Boeckh Plat” was based on a grid and set aside major open spaces following natural drainage ways leading to the Savannah River. Parks and open space were envisioned on those drainage ways. The “Boeckh Ravine Parks,” located on both sides of the original city, have been developed to some degree.

The original planned natural areas in the city have been zoned “open space preservation” for approximately thirty years and the potential for future development, other than as parks and open space, is limited. Additional areas of the city annexed over the last sixty years are currently subject to future development and include natural and sensitive lands and drainage ways. Some of those areas are in danger of insensitive development and destruction.

Additionally, there are large undeveloped areas of environmentally sensitive land outside the city limits but within the planning area that are also in danger of insensitive development. One example of an appropriate land conservation effort was undertaken by the South Carolina Wildlife and Marine Resources Department when it acquired approximately 80 acres on the Savannah River north and northwest of the Savannah Barony subdivision for preservation in a natural state. The site, known as the Savannah River Bluffs Heritage Preserve, is part of the South Carolina Heritage Trust Program and is the only permanently protected habitat for the federally endangered Relict Trillium.

There are several large undeveloped parcels close to the city center that contain areas of both steep slopes and wetlands. However, large portions of the unimproved parcels are appropriate for urban development. They are located east of Georgia along the bluff overlooking the Savannah River, east of Martintown Road between Martintown Road and the Savannah River, and east of US 25 in Belvedere.

### **Air Quality**

Air quality is a significant issue throughout the country, in the Central Savannah River Area (CSRA) and in Aiken County. Air pollution has a direct impact on public health and well-being. It also has implications for economic development, transportation, and the quality of life in a community. However, air pollution in the CSRA, including North Augusta, currently meets the limits set by the EPA.

Ozone, the main ingredient of smog, is a serious air quality problem. Even at low levels ozone can have multiple effects on the human respiratory system. Particulate matter is another air pollutant, and includes any material that exists as solid or liquid in the atmosphere and may be in the form of fly ash, soot, dust, fog, fumes or other materials. Particulate matter causes irritation and damage to the respiratory system resulting in difficulty breathing, bronchitis and aggravated respiratory disease. Exposure to particulates affects individuals with chronic pulmonary or cardiovascular disease, influenza and asthma. It affects children and the elderly most severely.

Non-attainment designation has implications for economic development and transportation in the area. Under nonattainment new or expanding industry that generates emissions would be subject to the EPA's new source review program requiring new plants and major modifications to existing plants to obtain a permit before construction which can be issued only if the new plant or major modification includes pollution control measures that reflect the best technology available.

Under the Clean Air Act, metropolitan planning organizations in non-attainment areas must demonstrate through the transportation conformity process that planned transportation investment strategies and programs have air quality impacts consistent with the state implementation plan. They must also demonstrate that emissions do not exceed the target for emissions from mobile sources.

Aiken County is participating with the South Carolina Department of Health and Environmental Control (SCDHEC) in the State Implementation Plan (SIP). The State Implementation Plan (SIP) is developed to show how a state will meet the National Ambient Air Quality Standards (NAAQS) for six common pollutants, called “criteria pollutants,” as set forth by the Clean Air Act. A SIP is the accumulated record of documents that form a blueprint and timeline for the state’s plans to assure compliance with the NAAQS for criteria pollutants (carbon monoxide, sulfur dioxide, ozone, nitrogen dioxide, lead, and particulate matter), as outlined in the Clean Air Act. SIPs include, among other things, control plans, regulations, and inventories of emissions within the state. Once approved, the SIP is enforceable by the state and EPA. For more information, see EPA’s SIP webpage.

South Carolina’s SIP includes the initial SIP, which was submitted to the U.S. Environmental Protection Agency (EPA) in 1972, and the accumulated record of its amendments. These amendments, going back to 1973, along with the original SIP, constitute South Carolina’s SIP. Though there are many amendments, there is only one South Carolina SIP. DHEC submits amendments to the EPA, and after reviewing the revisions, the EPA publishes a proposed action, which is open for public comment in the Federal Register. Possible proposed actions include approval, disapproval, partial approval, conditional approval, and a direct final rule. Following a review of the comments, the EPA issues a final rule. The EPA memoranda that guide this process includes a 1992 memorandum and April and November 2011 memoranda. The EPA maintains approvals of all states’ SIPs in the Code of Federal Regulations. South Carolina’s is at 40 CFR Part 52, Approval of Implementation Plans, Subpart PP, South Carolina.

## **WATER RESOURCES**

The dominant hydrographic feature in the city is the Savannah River. The river forms the city’s southwestern boundary and serves as the state line between Georgia and South Carolina. North Augusta’s potable water supply is pumped from the Savannah River. The stretch of the river adjacent to North Augusta is one of the more unique parts of the waterway. Adjacent to North Augusta is where the river rolls over the fall line separating the piedmont and coastal plain physiographic provinces. The shallow waters of the fall line served as a river crossing for centuries and the characteristics are in sharp contrast to the deeper navigable reaches downstream. This change in the river’s environment allows it to support a variety of plants, animals and wildlife, and gives residents a greater appreciation of the natural environment. Over the years a number of archaeological sites have been identified in the area, many of which are located in the floodplains and swamps near the river corridor.

### **Drainage Basins**

North Augusta is located in the Middle Savannah Watershed of the Savannah River Basin. The City acquires its drinking water from the Savannah River. With that in mind, the Stormwater Management Department conducts extensive surveys of the sub-basin’s drainage patterns, land uses, stream integrity, and water quality in sub-basins with medium and high density

residential or commercial land uses. There are seventeen drainage sub-basins delineated and named. The data for each is used to rank the sub-basin's overall health as Excellent, Good, Fair or Poor. When a new development project is proposed, its location in the watershed is determined along with the sub-basin ranking as part of the overall review and assessment of the project. The city ordinance requires all projects adhere to a 25-foot natural stream buffer. In addition, for Fair and Poor ranked sub-basins, the city takes an even closer look at the project for the long-term sustainability, preservation, and protection of stream integrity and water quality. Detailed information is available in the City of North Augusta Stream Water Quality Assessment reports.

### **Carolina Bays**

Carolina Bays are elliptical depressions concentrated throughout the east coast. These depressions vary in size and play an important role to the ecosystem. Because they are often shallow, they create great potential for becoming ephemeral wetlands, and provide habitats for many wildlife species. Carolina Bays that have a permanent hydroperiod can provide a habitat for various plant and fish species, while Bays with nonpermanent hydroperiods provide an ideal environment for a variety of plant and herpetofauna species, whose populations are being threatened primarily due to development. There are several Carolina Bays within or adjacent to the North Augusta city limits. One significant bay is located on the Wertz property in the southeast quadrant of the I-20 – US 25 interchange at exit 5. It is known as Mathis Lake and is skirted by the new I-520 alignment on the east.

### **New Savannah Bluff Lock and Dam**

The New Savannah Bluff Lock and Dam was opened in the late 1930's to aid in river navigation between Augusta and Savannah. However, commercial vessel navigation ended in 1979, ceasing to deliver its authorized purpose. Currently, the project provides a pool upstream of the lock and dam and is used as a water supply for municipal and industrial use in Augusta and North Augusta. The lock and dam is currently undergoing design and construction in compliance with the Endangered Species Act, to reduce its impacts on the sturgeon population in the river. In 2016, the Water Infrastructure Improvement for the Nation (WIIN) Act, was passed, which provides authority for the US Army Corps of Engineers to build a fish passage as required by the Savannah Harbor Expansion Project, while supplying a pool behind the structure to continue water supply and recreation.

## **Flood Plains & Wetlands**

### **Floodplains**

A substantial portion of the southwestern boundary of North Augusta bordering the Savannah River has been identified as within the river's floodplain. Additionally, portions of the drainage areas of several tributaries, Horse Creek, Pole Branch, Fox Creek, Crystal Lake Creek and Rapids

Creek and include both floodways and floodplains. Floodplain studies of the Savannah River and flood control measures constructed upstream from North Augusta conducted in the early 1990's resulted in the floodplain elevation within the city being lowered significantly. In 1994, revised Flood Insurance Rate Maps were published. In 1995, the River Golf Club was zoned Planned Development (PD). The development included a golf course, clubhouse and single-family residential units along the river. The RiverNorth tract, another planned development, is also currently under development as a residential community. Both developments include protected wetland areas.

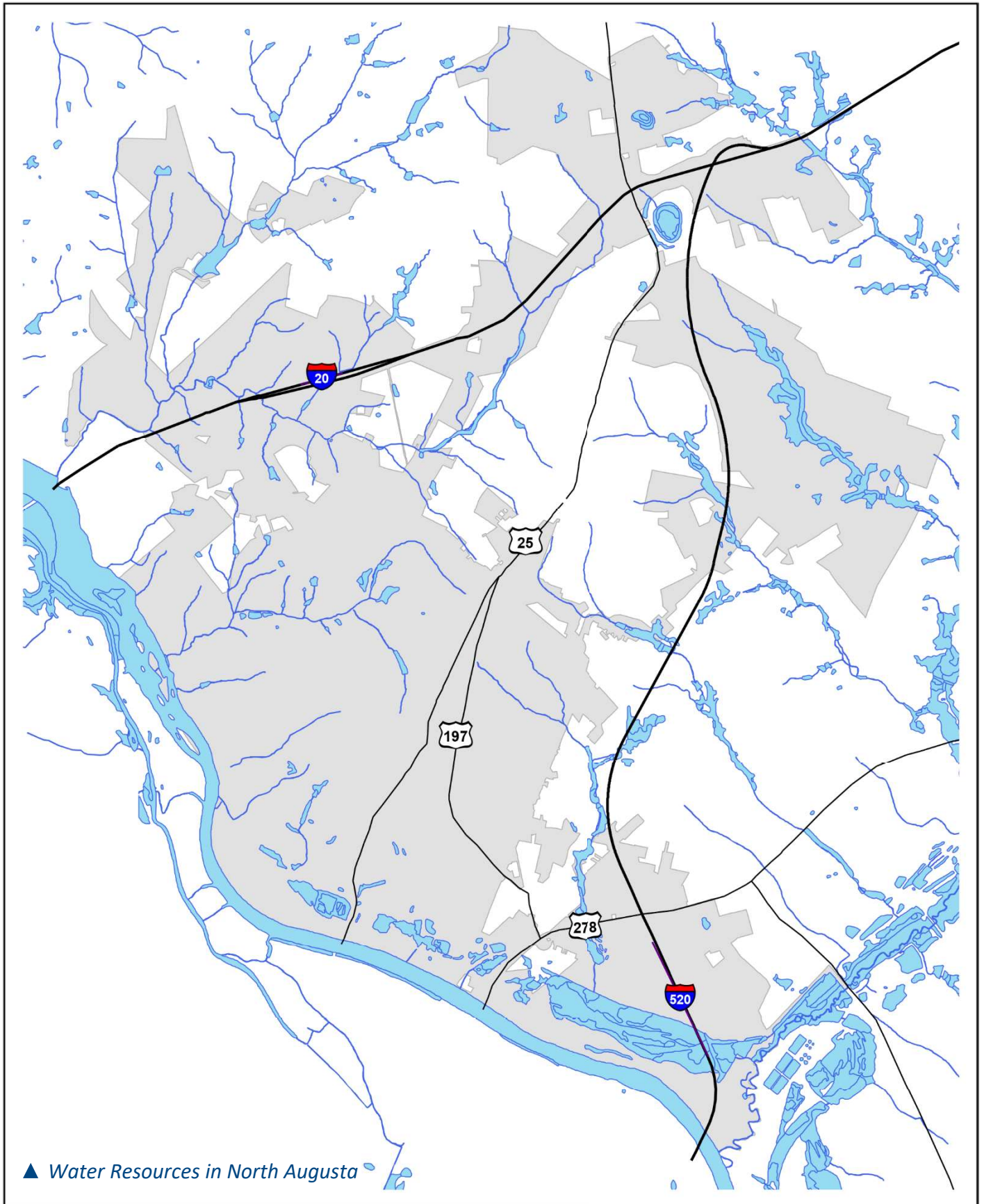
Since the dams were constructed on the Savannah River and the flood elevation was lowered in 1994, much of the available Savannah River frontage in the city has been developed for private residential use and ownership. The residential development has re-shaped the riverbank, stabilized it with stone rip-rap and eliminated the natural riverbank vegetation. Some residential properties have violated city floodplain and floodway management regulations by filling in the floodway and modifying the riverbank. Areas of undeveloped riverfront land outside the city limits remain in a variety of parcel sizes and ownerships. Future development should retain natural vegetation and character when possible.

Public access to the river is now severely limited in the city and in the planning area both upstream and downstream of the city limits. Approximately one mile of riverfront, formerly the original North Augusta industrial area, was purchased by the city for Brick Pond Park and Greenway. The limited amount of undeveloped land remaining on the riverfront presents additional opportunities for public access.

### **Wetlands**

Wetlands are areas of land that become inundated with water all year or at various times throughout the year. Wetlands can be characterized by hydric soils, with various types of flora and fauna associated with these areas. Wetlands typically support both aquatic and terrestrial species, and various types of wildlife exist in these habitats depending on the wetland type. The US Army Corp of Engineers maintains authority over the discharge of dredged or fill materials into wetlands, and depending on the size and wetland type, permits may need to be obtained before altering a wetland. Substantial wetland areas have been identified along the river and its tributaries. The Sanders (RiverNorth between US 1 and I-520, the Palmetto Parkway), River Golf Club (between the 5th Street and 13th Street bridges) and Mason Turf Farm (east of the Palmetto Parkway) properties all contain substantial wetland areas. The wetlands areas of the River Club have been incorporated into the River Club Golf course. The wetlands adjacent to RiverNorth have been reserved as a conservation area. The City also contains a number of smaller wetland areas along Horse Creek, Little Horse Creek, Mim's Branch, Pole Branch, Fox Creek, Rapids Creek, Crystal Lake Creek and in the Boeckh Ravines.





## GOALS & STRATEGIES

### 9.1

#### **PRESERVE AND EXPAND THE TREE CANOPY:**

Adopt regulations and coordinate between City departments to preserve and plant more trees.

##### **9.1.1. Maintain our Tree City USA designation.**

In 2018, the City added a certified arborist to its Property Maintenance Division. With the help of the City arborist, the City should maintain its Tree City USA designation as well as maintain a Tree Board or Department, implement a Tree Care Ordinance, adopt a community forestry program with an annual budget of at least \$2 per capita, and host an Arbor Day observance and proclamation.

##### **9.1.2. Create regulations to protect significant trees.**

The City can identify significant trees and adopt development regulations to require the preservation of these significant trees where appropriate.

##### **9.1.3. Implement a City Street Trees Program.**

Implement a City program to plant street trees in existing rights of way where none currently exist and on City property where appropriate.

### 9.2

#### **PROTECT THE SAVANNAH RIVER AND OTHER NATURAL RESOURCES:**

Coordinate with other organizations and adopt policies to protect natural resources in North Augusta.

##### **9.2.1. Cooperate with other government entities in the management of water resources.**

Continue cooperation with the states of South Carolina and Georgia, Aiken County, Augusta/Richmond County and Columbia County in the cooperative management of water resources in the Savannah River Basin. Maintain the Augusta Pool to preserve natural resources, provide for appropriate economic development and maintain an adequate water supply for the area.

##### **9.2.2. Acquire or otherwise permanently protect environmentally sensitive areas.**

Utilize available city funding and intergovernmental grants to acquire natural drainage ways, Carolina Bays, unprotected upland wetlands and other environmentally sensitive

areas, for open space preservation, stormwater management, park land and extensions of the Greenway system.

**9.2.3. Work with other local governments to protect the New Savannah Bluff Lock & Dam.**

Continue to work with the Army Corps of Engineers to restore the New Savannah Bluff Lock and Dam as well as the Savannah Harbor Expansion Project Fish Passage to allow sturgeon and other species to move freely through the dam.