Georgia Water Supply Redundancy Study
Coosa-North Georgia Water Planning Region
Georgia Environmental Finance Authority (GEFA)

Prepared for:

Georgia Environmental Finance Authority

Georgia Water Supply Redundancy Study

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Acronyms

ACF	Apalachicola-Chattahoochee-Flint
ACT	Alabama-Coosa-Tallapoosa
ADD	Average Daily Demand
ASR	Aquifer Storage and Recovery
DIP	Ductile Iron Pipe
EPD	Environmental Protection Division
GEFA	Georgia Environmental Finance Authority
gpm	Gallons Per Minute
GSWCC	Georgia Soil and Water Conservation Commission
MGD	Million Gallons Per Day
MNGWPD	Metropolitan North Georgia Water Planning District
QWS	Qualified Water System(s)
RWP	Regional Water Plan
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
Wood	Wood Environment and Infrastructure Solutions, Inc.
WSIRRA	Water System Interconnection, Redundancy, and Reliability Act
WTP	Water Treatment Plant

1.0 Introduction

In May 2010, the Water System Interconnection, Redundancy, and Reliability Act (WSIRRA) was signed into law (Senate Bill 380). A main goal of the Act was to identify and increase interconnections and redundancies for the Metropolitan North Georgia Water Planning District (MNGWPD). With this Act, Georgia affirmed the importance of comprehensive water emergency planning and the value of effectively sharing our current water resources through well-considered redundancy and interconnection planning. While the Act did not apply to water planning regions outside of the MNGWPD, its concepts and framework are useful for emergency planning throughout Georgia.

The Georgia Environmental Finance Authority (GEFA), through the services of Wood Environment and Infrastructure Solutions, Inc. (Wood), conducted a study identifying opportunities for water supply redundancy for qualified water systems (QWS) located outside the MNGWPD. For the purposes of this report, a QWS is a public water system owned and operated by a city, county, or water authority that serves a total population (retail plus consecutive populations served) greater than 3,300 people. Some systems serving just below the population threshold of 3,300 are included as well. This report details the Coosa-North Georgia Water Planning Region, which consists of 18 counties in northern Georgia, as shown in Figure 1-1. GEFA identified 35 QWS within the Coosa-North Georgia Water Planning Region, as shown in Figure 1-2.

1.1 Purpose

The purpose of the Water Supply Redundancy Study is to increase Georgia's water supply solvency and reliability. This study evaluates drinking water supply, demand, treatment, storage, distribution, and interconnectivity to identify redundant water supply sources capable of providing backup water supply for each QWS.

Emergency scenarios were evaluated consistent with similar emergency supply planning projects in the state, such as the GEFA Water System Interconnection, Redundancy and Reliability Act Emergency Supply Plan (CH2MHill, Jacobs, Lowe Engineers, 2011) for the MNGWPD. These emergency scenarios include:

- Failure of largest treatment facility within a planning region
- Short-term catastrophic failure of distribution system
- Short-term contamination of a raw water source
- Failure of an existing dam of a raw water source
- Water supply reduction due to drought

Potential interconnection and redundancy projects were identified and prioritized. Each planning-level potential project includes the steps required to modify a QWS's operation and infrastructure to share water with adjacent water providers. Wood developed a decision-based prioritization tool that summarizes the specific system deficiencies (in volumetric demand) from emergency situations and quantifies emergency supply goals. The prioritization tool highlights available emergency water supply and deficits under existing and future conditions. Potential projects were prioritized and recommended based on performance using weighted quantitative and qualitative criteria.

1.2 Study Approach

An overview of each step of the study approach is outlined below.

1.2.1 QWS Data Collection

A detailed questionnaire and data request list were developed to collect data from each QWS. The questionnaire included general system data, water demand and usage, infrastructure and supply, and other planning information. QWS were contacted to conduct a follow-up interview. The results of the survey and interview were tabulated and reviewed. Study participation was optional. Some QWS opted not to participate or to partially participate. If data were unavailable or incomplete, professional reasoning was used to recommend a technically-sound approach for dealing with missing or incomplete data, including use of publicly available data.

1.2.2 Redundant Water Supply Sources

The collected survey data and additional information gathered from other sources, such as the Georgia Environmental Protection Division (EPD), regional water plans (RWPs), and the *GEFA Georgia Inventory and Survey of Feasible Sites for Water Supply Reservoirs* (MACTEC, 2008) report served as the foundation to evaluate sources of water supply capable of providing redundant supply for each QWS. Such water sources include raw and potable water sources, interconnections between systems, and excess capacity of current allocations. These identified water supply sources were pre-screened for their potential to serve regional or multi-jurisdictional water needs. Where sufficient information was available, quantitative screening criteria were used to compare sites and, where quantitative information was not readily available, qualitative evaluation and professional reasoning were used for the initial screening. These locations and other nearby stream networks were examined at a planning-level scale, taking into consideration issues such as current and/or future hydrographs, low-flow conditions, stream capacity, downstream non-depletable flow requirements, water quality, pumping and transmission requirements, permitting requirements, treatment requirements, and cost.

1.2.3 Emergency Planning Benchmarks

The QWS average daily demand (ADD) obtained from the data collection process was used to quantify tiered emergency supply goals within each system. This method highlights where full supply of demand may not be available during some emergency scenarios although reduced critical needs can be met by another system. For consistency with the MNGWPD study, the following reliability targets were used:

- 100% ADD
- 65% ADD
- 35% ADD

It is assumed that the 35% and 65% reliability targets correspond to estimated usage associated with essential water needs. GEFA has identified customers with essential water needs as hospitals, nursing home/assisted living facilities, correctional facilities, critical industries, and schools.

1.2.4 Water Supply Risk Evaluations

To carry out the preliminary screening, specific system deficiencies (in volumetric demand) of the emergency scenarios and supply goals within the focus area were calculated. The purpose of this is to highlight available emergency supply and deficits under existing and future conditions. The reliability targets were applied to each QWS under specified emergency situations to evaluate the capability of a QWS to supply sufficient water during that emergency. Deficiencies (in volumetric demand) from emergency situations were quantified for each QWS. In addition, the maximum deficit (Critical Scenario Deficit) was determined for each QWS.

1.2.5 Evaluation of Potential Projects

Potential redundancy projects were conceptualized for each QWS. These projects may include infrastructure redundancy, new interconnections, and upgrades to existing interconnections. Planning-level costs were estimated for potential redundancy projects based on RSMeans (a construction cost estimating software) or manufacturer prices.

1.2.6 Recommended Projects

Using a decision-based prioritization tool, absolute and weighted scores were calculated for each option. The options were then ranked using defined criteria (e.g., cost, environmental impacts). A sensitivity assessment was undertaken to test the influence of the category weightings on the rank outcome. Potential projects were then prioritized based on performance under these weighted quantitative and qualitative criteria.

2.0 QWS Data Collection

Detailed information about each QWS was obtained via a survey-based questionnaire, follow-up interviews, publicly available documents, information supplied by EPD, and data provided by the QWS.

2.1 Data Request

Each QWS was sent a standardized questionnaire approved by GEFA. The general categories are listed as follows:

- General system data (e.g., facility type, ownership type, and population served)
- Customer information (e.g., number of customers and critical facilities served)
- Water source information (e.g., source type and capacity, purchased water information, and water sales information)
- Permit conditions and limitations
- System infrastructure data (e.g., storage, treatment, and distribution system data)
- System interconnection data
- Future water supply planning considerations

Each QWS was also sent a data request list approved by GEFA, as follows:

- Master Plan
- Capital Improvement Plan
- Water Withdrawal Permits (both groundwater and surface water withdrawal)
- Public Water System Operating Permit(s)
- Surface Water and Groundwater Withdrawal Values (2015 through 2019)
- Sanitary Surveys (2015 through 2019)
- Water Sale Documents
- Emergency Planning Documents
- Mapping Information

2.2 Current and Future Conditions

For this study, 35 QWS in the Coosa-North Georgia Water Planning Region were surveyed. Textile manufacturing, food services, and other manufacturing are the primary economic sectors in the Coosa-North Georgia Region. Land cover in the region is composed of approximately 68% forest, 13% row crops/pasture, 11% urban, 1% open water, <1% wetland, and 6% other (Coosa-North Georgia Water Planning Council, 2017).

2.2.1 General System Information

Table 2-1 shows key general information about the 35 QWS. The QWS in this region serve primarily municipal customers, and to a lesser extent, industrial customers. Water for agricultural purposes is almost exclusively obtained from private sources, such as private wells. Blairsville serves the smallest total population and has one surface water supply source and four groundwater supply wells, while Dalton serves the largest total population and has five surface water supply sources and one spring supply source.

Findings from data collection include the following general information about the Coosa-North Georgia Region:

- Six QWS use groundwater-only drinking water sources.
- Eleven QWS use surface water-only drinking water sources.
- Three QWS use spring-only drinking water sources.
- Five QWS have groundwater and surface water drinking water sources.
- Two QWS have surface water and spring drinking water sources.
- Two QWS have groundwater and spring drinking water sources.
- Three QWS have groundwater, surface water, and spring drinking water sources.
- Three QWS are purchase-only systems that do not have raw water sources.
- Systems range from approximately 26 years old to more than 100 years old, with thirteen systems greater than or equal to 70 years old. One QWS is of an unknown system age.
- The largest system customers are typically industries, educational facilities, or critical care facilities (e.g., hospitals). However, other public water systems are large customers for several QWS.
- twenty-one QWS reported regular water sales.
- Fifteen QWS reported regular water purchases.
- Seventeen QWS have at least one backup power source/facility.
- Six systems reported distribution system flow surplus capabilities.
- The following system interconnections, including emergency interconnections, were reported:
    - Baldwin is interconnected with Demorest and Cornelia.
    - Blairsville is interconnected with Notla Water Authority.
    - Blue Ridge is interconnected with McCaysville and three permitted Fannin County systems.
    - Calhoun is interconnected with Chatsworth, Pickens County, Adairsville, Floyd County, and Dalton.
    - Catoosa Utility District Authority is interconnected with Dalton, LaFayette, Ringgold, Walker County, Tennessee American Water Company (Tennessee), and Eastside Utility District (Tennessee).
    - Cave Spring is interconnected with Floyd County, Polk County, and Northeast Alabama Water Authority (Alabama).
    - Cedartown is interconnected with Polk County.
    - Chatsworth is interconnected with Calhoun, Dalton, and Ocoee Utility District (Tennessee).
    - Chattooga County is interconnected with Summerville, Lyerly, Walker County-Armuchee Valley, and Fort Payne (Alabama).
    - Chickamauga is interconnected with Walker County.
    - Clarkesville is interconnected with Demorest.
    - Cleveland is interconnected with White County.
    - Cornelia is interconnected with Baldwin, Demorest, and Mount Airy.
    - Dade County is interconnected with Tennessee American Water Company (Tennessee).
    - Dahlonega is interconnected with Lumpkin County.
    - Dalton is interconnected with Chatsworth, Calhoun, Catoosa Utility District Authority, and Eastside Utility District (Tennessee).
    - Demorest is interconnected with Alto, Baldwin, Toccoa, Cornelia, Clarkesville, Tallulah Falls, and Mount Airy.
    - Ellijay-Gilmer County is interconnected with Pickens County, Walnut Mountain POA, and Eagles Mountain Campground.

- Etowah Water & Sewer Authority is interconnected with Forsyth County, Cherokee County, and Dawsonville. A prior interconnection with Lumpkin County was terminated after 2019.
- Floyd County is interconnected with Adairsville, Calhoun, Cave Spring, and Rome.
- Fort Oglethorpe is interconnected with the Tennessee American Water Company (Tennessee).
- Hiawassee is interconnected with Towns County.
- Jasper is interconnected with Pickens County and Cherokee County.
- LaFayette is interconnected with Catoosa Utility District Authority, Walker County.
- McCaysville is interconnected with Blue Ridge and Copperhill.
- Notla Water Authority is interconnected with Blairsville.
- Pickens County is interconnected with Cherokee County, Calhoun, Farimount, Jasper, Big Canoe Subdivision, and Ellijay-Gilmer County.
- Polk County is interconnected with Cedartown, Bartow County, Haralson County, Paulding County, and Rockmart.
- Rockmart is interconnected with Polk County.
- Rome is interconnected with Floyd County.
- Summerville is interconnected with Chattooga County, Lyerly, and Trion.
- Towns County is interconnected with Hiawassee and Clay County (North Carolina).
- Walker County is interconnected with LaFayette and Chickamauga.
- White County is interconnected with Cleveland, Helen, Hall County, Mt. Yonah Scenic Estates, Timberlane, Huckleberry Hill Subdivision, Strong Rock Camp and Retreat, and Teel Mountain Homeowners Association.

Overall, data collected show that the QWS have a 2019 combined average treatment capacity of over 92 million gallons per day (MGD) and a 2019 combined peak operational capacity of over 131 MGD. Note, these values do not include the purchase-only systems. The 35 QWS serve a total estimated direct population of approximately 596,600 people and a total estimated consecutive population of 66,700 people. Note that combining the direct and consecutive population values may result in certain users being counted twice. For example, Dalton sells water to Chatsworth.

2.2.2 Mapping Data

Mapping data were requested of the QWS. Specifically, information was requested related to drinking water infrastructure, such as: pumping and treatment facilities, storage tanks (ground and elevated), pipelines, booster pumps, distribution systems, hydrants, elevation values, etc. Digital mapping data (specifically GIS format) were preferred. However, hydraulic computer models and hard copy/PDF maps were also accepted. If hard copy/PDF maps were manually digitized, priority was given to digitizing water lines on the edges of the QWS distribution system because identifying potential interconnection opportunities was a main objective.

Table 2-2 shows mapping data (if any) received from the 35 QWS. Fourteen systems provided GIS data. Hard copy/PDF maps were obtained from 19 QWS. One system provided CAD mapping data. Two systems provided Google Earth mapping data. Hard copy maps were georeferenced and digitized based on known landmarks.

2.2.3 Reports and Documents

Several reports and documents were requested from each QWS, as detailed in Section 2.1.

Table 2-3 shows the reports and other documents received from the 35 QWS. The 35 QWS had documents available, with comprehensive plans, water loss audits, permits, and sanitary surveys being the most frequently provided documents. EPD supplied recent sanitary surveys and 2015 and 2019 water audits for many systems. The Georgia Department of Community Affairs website contained comprehensive plans for many QWS. Based on review of comprehensive plans and survey responses, future (post-2019) planned water infrastructure improvements include:

- A new well for Chickamauga, Cleveland, Coosa, LaFayette, and Summerville
- New storage tanks for Baldwin, Calhoun, Chatsworth, Chickamauga, Dade, Hiawassee, McCaysville, Pickens County, Rome, and Towns County
- Water line repair/replacement projects for Baldwin, Blue Ridge, Calhoun, Cedartown, Chatsworth, Chattooga County, Cleveland, Coosa, Cornelia, Dahlonega, Demorest, Ellijay-Gilmer County, Fort Oglethorpe, Lafayette, Polk County, Rome, and Summerville
- An expanded distribution system for Blue Ridge, Cedartown, Chatsworth, Chattooga County, Cleveland, Dalton, Demorest, Fort Oglethorpe, LaFayette, and Rome
- General maintenance for Baldwin, Cedartown, Cornelia, and McCaysville
- Increased treatment capacity for Chickamauga, Cleveland, Coosa, Cornelia, Demorest, Hiawassee, Rome, and Walker County
- A new booster pump station for Chatsworth, Cedartown, and Walker County
- Water treatment plant expansion for Cornelia, Dalton, Etowah Water & Sewer Authority, Hiawassee, and Walker County
- Water treatment plant rehabilitation for Blue Ridge, Cedartown, Clarkesville, Dahlonega, Ellijay-Gilmer County, and Hiawassee
- A new water treatment plant for Chatsworth, Ellijay-Gilmer County, LaFayette, and Pickens County
- A new generator for Coosa, Rome, and Walker County
- Fire hydrant replacements for Cornelia and Pickens County
- A potential new interconnection for Cornelia, Dade County, Pickens County
- A potential new reservoir for Cornelia, Dade County, Etowah Water & Sewer Authority, and Jasper
- A new clearwell for LaFayette

3.0 Redundant Water Supply Sources

Water supply sources were evaluated for their potential ability to provide surplus water to a neighboring water system during an emergency. Such water sources include excess capacity of current permitted allocations, new water sources, and interconnections between systems. Factors potentially affecting source availability were also noted.

3.1 Excess Capacity from Existing Water Sources

Existing water source excess capacity was evaluated for availability during short-term, defined durations, which are often less than three days but no more than 120 days. Long-term, undefined durations, as detailed further in Section 5, apply to this region but are not pursued. Therefore, existing water sources were only assessed for the 2015 and 2050 short-term, defined duration scenarios.

Table 3-1 presents the 2015 and 2050 peak day design capacity, ADD, and resultant excess capacity for each QWS, as well as current permitted peak withdrawal capacity. The ADD values exclude purchased water to portray the true net regional water need. Purchase-only QWS have no reported values because their demand is accounted for in the demand allocation of their supplier(s). Appendix A describes the peak day design capacity and ADD calculations.

Excess capacity for a groundwater QWS short-term, defined emergency scenario was calculated by subtracting the ADD (water withdrawal only, not including purchased water) from the peak day design capacity. For surface water QWS, the smaller of the peak day design capacity value and the peak permitted withdrawal value (24-hr maximum) was used for the excess capacity calculation. For this region, surface water withdrawal permit limits affect the excess capacity calculation for Cornelia (2050), Ellijay-Gilmer County (2050), Hiawassee (2050), Jasper, McCaysville, and Polk County. The excess capacity evaluation has a few key assumptions. It relies on readily available interconnections with the appropriate capacities. It also assumes that a QWS can increase to above-average production to supply water to another QWS experiencing an emergency. This assumption may not be appropriate if local needs of the supplying QWS are above average during the same emergency, resulting in less available excess capacity. In addition, because QWS data for this water planning region were collected in 2020, the self-reported 2015 peak day design capacity may reflect capital improvements that a QWS implemented between 2015 and the time the QWS was surveyed for this current analysis.

As Table 3-1 shows, there is sufficient excess capacity from existing sources for short-term, defined emergency durations for 2015 for 32 of the 32 non-purchase-only QWS. As noted above, purchase-only QWS are reported in Table 3-1 and Table A-4 as "not applicable." For 2015 demands, excess capacity is at least two times a given QWS's 2015 ADD for eight of the 32 QWS: Blairsville, Calhoun, Chattooga County, Dahlonega, Demorest, Etowah Water & Sewer Authority, Notla Water Authority, and White County. The 2015 excess capacity values range from 0.2 MGD (Cleveland) to 41.3 MGD (Dalton).

For 2050 demands, there is sufficient excess capacity for 25 of the 33 non-purchase-only QWS. Pickens County plans to install a new WTP (0.33 MGD) and is no longer classified as a purchase-only system for 2050. Eight QWS have a deficit: Baldwin (0.5 MGD), Catoosa Utility District Authority (0.2 MGD), Coosa Water Authority (0.1 MGD), Demorest (2.3 MGD), Floyd County (0.4 MGD), Hiawassee (0.3 MGD), Jasper (0.04 MGD), and Pickens County (1.0 MGD). While it may be likely that these QWS would increase peak day design capacity before the predicted ADD surpasses it, the potential lack of excess capacity highlights the need for increased capacity by 2050. Excess capacity is at least two times a given QWS's 2050 ADD for

four of the 33 QWS: Blairsville, Chickamauga, Dahlonega, and Rockmart. The 2050 excess capacity values range from -2.3 MGD (Demorest) to 25.3 MGD (Dalton). The QWS' capacities were scaled to allow for a comparison of excess capacities. Appendix A describes and shows the excess capacity index calculations and values. Excluding the 2050 negative excess capacities, Jasper's 2015 and Clarkesville's 2050 scaled excess capacity sufficiency is the lowest relative to other Coosa-North Georgia QWS.

3.2 Potential Water Sources and Storage Options

Potential additional water supply sources include groundwater, surface water, and surface water impoundments (e.g., dammed reservoirs). The Coosa-North Georgia Water Planning Region includes four geologic regions: the Appalachian Plateau in the far northwestern part of the region, Valley and Ridge in the western part of the region, Blue Ridge in the northern and eastern part of the region, and Piedmont in the southeastern part of the region. The Piedmont and Blue Ridge geologic regions are characterized by igneous and metamorphic rocks with clayey soils, while the Appalachian Plateau and Valley and Ridge geologic regions are characterized by sedimentary rocks with gravely to clayey soils.

3.2.1 Groundwater

Groundwater sources accounted for 5% of the region's 2010 water supply, whereas surface water sources accounted for 95% of the region's 2010 water supply. The 2010 groundwater withdrawal by category is as follows: 81% municipal, 12% industrial, and 8% agriculture (Coosa-North Georgia Water Planning Council, 2017). Note that the Coosa-North Georgia Region includes domestic/self-supply water supply in the municipal water supply. Aquifer systems in the Coosa-North Georgia Region include crystalline rock aquifers in the Piedmont and Blue Ridge geologic regions and Paleozoic rock aquifers in the Appalachian Plateau and Valley and Ridge geologic regions. Figure 3-1 shows relevant aquifers in the Coosa-North Georgia Region.

The RWP included a groundwater resource assessment of the Cretaceous, Floridan, and crystalline rock aquifers. Aquifer sustainable yield for the purposes of the resource assessment was defined as the amount of groundwater that can be withdrawn without reaching specific thresholds that indicate the potential for local or regional impacts. Impacts included localized aquifer drawdown, reduced stream baseflow, and long-term aquifer drawdown. Estimated sustainable yield for each aquifer was reported as a range, which reflects several computer model simulations with different assumptions. According to the RWP, total regional 2015 and estimated 2050 withdrawals from the crystalline rock and Paleozoic rock aquifers are below their estimated sustainable yields (Coosa-North Georgia Water Planning Council, 2017). The RWP noted that local gaps may occur if withdrawal rates exceed sustainable yield.

Municipal groundwater withdrawals are from the crystalline rock and Paleozoic rock aquifers (CDM Smith, 2017). Most of the regional groundwater demand is driven by municipal withdrawals from both aquifer systems (CDM Smith, 2017). Municipal water demand projections increase from 2015 to 2050 by approximately 14.4 MGD. Given that groundwater sources account for a small fraction (approximately 5%) of the region's total water supply, additional municipal supply wells, other than replacement wells, may not be needed in the Coosa-North Georgia Region.

3.2.2 Surface Water

The 2010 surface water withdrawal by category is as follows: 76% energy, 13% municipal, 6% industrial, and 6% agriculture (Coosa-North Georgia Water Planning Council, 2017). The Coosa-North Georgia Region contains portions of the following major river basins: Coosa River Basin in the central and

southwestern part of the region; Tennessee River Basin in the northern part of the region; Chattahoochee River Basin in the eastern part of the region; Savannah River Basin in the far eastern part of the region; and Tallapoosa River Basin in the far southwestern part of the region. Figure 3-2 shows relevant river basins in the Coosa-North Georgia Region. The Chattahoochee River, Conasauga River, Coosawattee River, Etowah River, Oostanaula River, and Coosa River are the primary rivers within the region. Carters Lake, Blue Ridge Lake, Nottely Lake, Chatuge Lake, and a portion of Lake Lanier are the primary reservoirs within the region. Carters Lake and Lake Lanier are operated by the U.S. Army Corps of Engineers (USACE) (Coosa-North Georgia Water Planning Council, 2017).

Surface water availability resource assessment models were conducted by EPD to evaluate consumptive demand and dry conditions on stream flows and lake storage. Potential gaps in terms of magnitude and duration were identified when a model fell below a threshold. Model results for 2015 and 2050 in the Tennessee Study Basin indicated that no potential gaps exist at the Chatuge Dam, Nottely Dam, and Copperhill nodes, while potential gaps exist at the Chickamauga and New England nodes. For context, the Chatuge Dam node is in Tennessee, just downstream of Hiawassee; the Nottely Dam node is near Ivylog; the Copperhill node is along the Georgia-Tennessee border, just downstream of McCaysville; the Chickamauga node is in Tennessee along South Chickamauga Creek near Chattanooga; and the New England node is near New England, Georgia. Model results for 2015 and 2050 in the Alabama-Coosa-Tallapoosa (ACT) Study Basin indicated that no potential gaps exist at the Kingston and Rome (Coosa) nodes, while potential gaps exist at the Gaylesville node. For context, the Gaylesville node is in Alabama along the Chatooga River. The RWP noted that portions of the Coosa-North Georgia Region influence sections of the Chattahoochee River Basin and Savannah River Basin, but planning nodes in those study areas are significantly downstream. The Council identified water conservation management and supply management practices to avoid future potential gaps. For example, Management Practices WC-1 through WC-11 and WS-1 through WS-8.

Municipal surface water withdrawals are primarily from the Coosa River Basin, with smaller withdrawal volumes from the Tennessee River Basin and Chattahoochee River Basin (CDM Smith, 2017). Most of the regional surface water demand is driven by the energy sector. As municipal water demand projections increase from 2015 to 2050 by approximately 14.4 MGD, increased surface water withdrawal may be needed in the Coosa-North Georgia Region.

The RWP further identified two counties that may need additional annual average withdrawal capacity if demand exceeds current permit limits: Dawson County and Towns County. These two counties primarily obtain water from surface water sources. The projected, additional permitted capacities needed in 2050 for Dawson County and Towns County are 1.65 MGD and 0.18 MGD, respectively (Coosa-North Georgia Water Planning Council, 2017).

3.2.3 New Reservoirs

Of all the potential water source and storage options, new reservoirs are the most environmentally sensitive, costly, and time-consuming (MACTEC, 2008). Specific new reservoirs were not identified by the Coosa-North Georgia Water Planning Council, but the council noted the need to evaluate existing reservoir storage for potential expansion (Management Practice WS-2) as well as evaluate the potential for constructing new reservoirs (Management Practice WS-3) (Coosa-North Georgia Water Planning Council, 2017).

The Etowah Water & Sewer Authority plans to construct a 137-acre drinking water supply reservoir called Russell Creek Reservoir. The reservoir, along Russell Creek, would be an expansion of the existing watershed dam Etowah River 13, also known as Head Lake, which is owned by the Etowah Water & Sewer Authority. Their USACE Clean Water Act Section 404 Permit Application for this project was approved in July 2017 and construction is planned for 2021 (Etowah Water & Sewer Authority 2021).

3.2.4 Georgia Inventory and Survey of Feasible Sites for Water Supply Reservoirs

In the 2008 report *GEFA Georgia Inventory and Survey of Feasible Sites for Water Supply Reservoirs*, MACTEC Engineering and Consulting, Inc., now Wood, and other consultants inventoried and surveyed drinking water supply reservoirs in Georgia (MACTEC, 2008). The effort focused on the potential to expand existing reservoirs via increasing dam heights and supplemental pumping from nearby streams. The report focused on the 78 counties above the Georgia fall line. Dade, Walker, Catoosa, Whitfield, Murray, Fannin, Gilmer, Union, Towns, Chattooga, Floyd, Polk, Gordon, Pickens, Dawson, Lumpkin, White, and Habersham Counties are above the fall line. Existing reservoirs were screened for expansion potential and 16 reservoirs were identified in the 2008 report for potential expansion. No reservoirs within the Coosa-North Georgia Region were identified as possible candidates.

Figure 3-3 displays the potential water storage options identified in Section 3.2.3 through Section 3.2.6.

3.2.5 Georgia Soil and Water Conservation Commission Flood Control Dams

In the 2007 report *Inventory and Assessment of USDA/Soil and Water Conservation District Watershed Dams: Finding Report* the Georgia Soil and Water Conservation Commission (GSWCC), Natural Resources Conservation Service, EPD, and consultants assessed existing watershed flood control dams that could be potentially modified to serve as water supply reservoirs (GSWCC, 2007). After 357 watershed dams were assessed, 166 were prioritized for further evaluation based on environmental impacts, infrastructure impacts, and potential water supply yield. Twenty watershed dams were initially selected for more detailed studies. Eight additional watershed dams were evaluated in areas where "demand would exceed supply in the near future" (GSWCC, 2009).

The Coosa-North Georgia Region has 100 watershed dams. Six of these watershed dams, Ellijay River 01 and Cartecay River 01 in Gilmer County, Talking Rock Creek 02 and Talking Rock Creek 13 in Pickens County, Etowah River 10 in Dawson County, and Middle Fork Broad River 44 in Habersham County were identified by GSWCC as high-potential water supply reservoirs in the 2007 study. The GSWCC issued individual reports for each of the 28 high-potential water supply reservoirs, and the six within the Coosa-North Georgia Region are detailed below:

- Ellijay River 01. Construction of a larger dam to raise the pool level would increase the impoundment's surface area to approximately 230 acres and the safe yield to approximately 20 MGD (Schnabel 2007a).
- Cartecay River 01. Construction of a larger dam to raise the pool level would increase the impoundment's surface area to approximately 181 acres and the safe yield to approximately 8.6 MGD (Schnabel 2007b).
- Talking Rock Creek 02. Construction of a larger dam to raise the pool level would increase the impoundment's surface area to approximately 124 acres and the safe yield to approximately 1 MGD (Schnabel 2007c).

- Talking Rock Creek 13. Construction of a larger dam to raise the pool level would increase the impoundment's surface area to approximately 173 acres and the safe yield to approximately 2.3 MGD (Schnabel 2008).
- Etowah River 10. Construction of a larger dam to raise the pool level would increase the impoundment's surface area to approximately 516 acres and the safe yield to approximately 17.8 MGD (Schnabel 2007d).
- Middle Fork Broad River 44. Construction of a larger dam to raise the pool level would increase the impoundment's surface area to approximately 94 acres and the safe yield to approximately 1.5 MGD (Schnabel 2007e).

Given Ellijay-Gilmer County's increased 2050 ADD and decreased 2050 excess capacity (Table 3-1), Ellijay River 01 and Cartecay River 01 are possible water supply reservoirs for this QWS. Given Jasper's increased 2050 ADD and decreased 2050 excess capacity (Table 3-1), and that it regularly sells water to Pickens County (QWS), Talking Rock Creek 02 and Talking Rock Creek 13 are possible water supply reservoirs for these QWS. Given that Etowah Water & Sewer Authority is in the process of expanding watershed dam Etowah River 13 (Section 3.2.3), Etowah River 10 is not a likely water supply reservoir for this QWS. Given Baldwin's increased 2050 ADD and decreased 2050 excess capacity (Table 3-1), and that it regularly sells water to Demorest, Middle Fork Broad River 44 is a possible water supply reservoir for these QWS.

Figure 3-3 displays the potential water storage options identified in Section 3.2.3 through Section 3.2.6.

3.2.6 Quarries

Abandoned rock quarries may serve as potential water storage reservoirs, particularly during emergency or drought scenarios. Quarry wall stability, rock permeability, and geographic proximity are important considerations for site selection. Multiple geologic regions are present in the Coosa-North Georgia Water Planning Region.The Blue Ridge and Piedmont geologic region bedrock and soils are generally igneous or metamorphic in origin and impermeable (unless fractured). Appalachian Plateau and Valley and Ridge geologic region bedrock and soils are generally sedimentary in origin and permeable. Therefore, hard-rock (igneous or metamorphic) and mineral quarries are present in the Blue Ridge and Piedmont geologic regions, while and sedimentary rock quarries are present in the Appalachian Plateau and Valley and Ridge geologic regions.

A GIS investigation was performed to assess the availability of quarries as potential reservoirs. A 5-mile radius was drawn around QWS municipal boundaries. The WTP locations were used as the radius origin for County Authority and Regional Authority QWS. Aerial imagery was visually inspected to identify quarries. In addition, publicly available online quarry inventories were checked.

In the Coosa-North Georgia Region, potential quarries were identified. USGS GIS data from *The State Geologic Map Compilation (SGMC) Geodatabase of the Conterminous United States* was used to identify quarry bedrock (Horton et al., 2017). In Union County, a potentially active quarry exists approximately 1 mile south of downtown Blairsville. The quarry's bedrock is biotite gneiss (Horton et al., 2017). Coosa Water Authority's and Blairsville's distribution systems are in the vicinity of the quarry. In Pickens County, a potentially active quarry exists approximately 2 miles northeast of downtown Nelson. The quarry's bedrock is marble and mica schist (Horton et al., 2017). Pickens County's distribution system is in the vicinity of the quarry. In Lumpkin County, a potentially active quarry exists approximately 4.5 miles southeast of downtown Dahlonega. The quarry's bedrock is gneiss (Horton et al., 2017). Dahlonega's distribution system is in the vicinity of the quarry. In Habersham County, a potentially active quarry exists

approximately 1 mile northwest of downtown Demorest. The quarry's bedrock is biotitic gneiss / mica schist / amphibolite (Horton et al., 2017). Demorest's distribution system is in the vicinity of the quarry. Therefore, these quarries could serve as potential future water storage reservoirs.

In Walker County, a potentially active quarry exists approximately 4 miles west of downtown LaFayette. The quarry's bedrock is limestone (Horton et al., 2017). LaFayette's distribution system is in the vicinity of the quarry. In Polk County, a potentially active quarry exists approximately 2 miles north of downtown Aragon. The quarry's bedrock is limestone and slate (Horton et al., 2017). Polk County's (QWS) distribution system is in the vicinity of the quarry. In Polk County, a potentially active quarry exists approximately 1 mile southwest of downtown Rockmart. The quarry's bedrock is slate (Horton et al., 2017). Polk County's and Rockmart's distribution systems are in the vicinity of the quarry. Given the sedimentary origin of these quarries' bedrock, these quarries are potential but unlikely candidates for a future water storage reservoir.

Consideration should be given to the technical issues important for development and operation of a quarry that could serve as a water supply reservoir, including the potential for water seepage from the reservoir through the jointed and fractured rock mass and the stability of the rock quarry slopes, environmental permitting requirements, and water quality considerations.

Figure 3-3 displays the potential water storage options identified in Section 3.2.3 through Section 3.2.6.

3.2.7 Aquifer Storage and Recovery

Aquifer Storage and Recovery (ASR) involves injecting treated water into an aquifer and later recovering the stored water for beneficial reuse, such as for drinking water supply. ASR offers a redundant water supply that can be accessed if aquifer storage is sufficient. EPD oversees the permitting and regulation of ASR projects, and to-date, EPD has not received ASR applications nor is aware of ASR projects in Georgia (EPD, 2021a). Therefore, each QWS should individually consider the feasibility of ASR.

The Coosa-North Georgia Water Planning Council's Management Practice WS-4, consider development of new groundwater wells, includes an activity to evaluate the feasibility of ASR (Coosa-North Georgia Water Planning Council, 2017).

3.3 Return Flow Reuse

There are two types of potable water reuse. Indirect potable reuse uses an environmental buffer, such as a lake, river, or a groundwater aquifer, before the water is treated at a drinking water treatment plant (EPD, 2021b). The *Indirect Potable Reuse Guidance Document* dated March 2021 describes the decision framework EPD uses to evaluate potential indirect potable reuse projects. Direct potable reuse involves the treatment and distribution of water without an environmental buffer. Potable water reuse provides another option for expanding a region's water resource portfolio.

Drinking water treatment and wastewater treatment typically occur in the same or nearby locations. When implementing direct potable reuse, the proximity of both wastewater and drinking water treatment may present considerable cost saving opportunities for municipalities. Some direct potable reuse systems may require additional water quality or process performance monitoring and/or an engineered storage buffer. In addition, because direct potable reuse has not been widely implemented, there is a lack of consensus in the scientific community about its safety. Therefore, each QWS should individually consider the feasibility of direct potable reuse.

The Coosa-North Georgia RWP lists two management practices in regards to return flow reuse: 1) WC-5: encourage non-potable reuse; and 2) WS-5: encourage indirect potable reuse (Coosa-North Georgia Water Planning Council, 2017).

3.4 Current Interconnections Between Systems

Several QWS interconnections exist in the Coosa-North Georgia Region. Thirty-four of 35 QWS indicated at least one interconnection with another public water system. Some of these interconnections are for regular water sales or purchases, while others are for emergencies and remain normally closed. If a QWS has excess capacity, as explained in Section 3.1, the QWS may be able to supply water to another QWS experiencing an emergency.

Figure 3-4 displays the available mapping data for the water region. As Figure 3-4 shows, multiple QWS are currently interconnected with another QWS, and several QWS have the potential to interconnect, which will be further discussed in Section 6.

3.5 Factors Affecting Availability of Water Supply

The viability of redundant water supply sources relies on certain factors, such as conveyance infrastructure, geographical barriers, permitting requirements, and source water quality compatibility.

3.5.1 Conveyance Factors

The feasibility of conveying water is a major consideration when assessing the practicality of using unused water sources to supply emergency water. Conveyance of water between two QWS or from new water sources would require construction of new pumping and piping infrastructure. The associated costs are key concerns and depend heavily on the proximity of the water source(s) to the QWS to be supplied. In addition, interconnections may be limited by natural obstructions, such as topography and surface water bodies, as well as man-made obstructions, such as roads, railroads, and buildings.

With the exception of the Coosa Water Authority, QWS are interconnected in the Coosa-North Georgia Region. This is likely due to a few factors. First, the region's population data show a relatively high concentration of QWS that serve less than 20,000 people (27 of 35 QWS) in a relatively condensed geographic area compared to other water planning regions. Further, the region has several county and regional authority QWS which tend to have larger distribution system service areas. For surface water systems, the cost and upkeep requirements of surface water reservoirs and WTPs are often higher than groundwater systems.

3.5.2 Water Withdrawal Permitting Factors

Any entity who withdraws, obtains, or utilizes groundwater in excess of 0.1 MGD must obtain a water withdrawal permit from EPD. Any entity who withdraws from, diverts from, or impounds waters of the state by more than 0.1 MGD on a monthly average basis must obtain a water withdrawal permit from EPD. The withdrawal permit identifies the permit expiration date, withdrawal purpose, withdrawal source, and standard conditions and special conditions for resource use. Table 3-1 shows the current peak permitted withdrawal limit for each QWS. For groundwater withdrawal permits, a daily peak can be above the permitted limit if the annual and monthly average withdrawals are below their respective limits. A short-term emergency water need met by excess capacity is likely to keep the QWS below their permitted values. If new water withdrawal sources are requested, they will be subject to EPD's permitting process and associated requirements, which will focus on the protection of both water quality and water quantity

and take into consideration downstream impacts. The permit application may require a drought contingency plan, water conservation plan, a watershed protection plan, and/or reservoir management plan, where applicable. Therefore, water withdrawal permitting should be a key consideration when proposing new or expanded water withdrawal.

3.5.3 Water Quality Factors

Sixteen of the 35 QWS in this region utilize groundwater sources and 10 QWS in this region utilize spring water sources. Raw water treatment for these QWS is similar, although certain differences exist. Differences are mainly attributed to pumping from one of the multiple principal aquifer systems and springs, which may differ in water quality compared to the other aquifers and springs. Within an individual aquifer, localized water chemistry and heterogeneity can be further responsible for raw water quality differences and, therefore, treatment differences.

Twenty-one of the 35 QWS in this region utilize surface water sources. Raw water treatment for these QWS is more robust and varied compared to groundwater treatment. Differences are mainly attributed to pumping from one of the multiple surface water bodies. Factors that may affect surface water source quality include land use, potential pollutant sources, nutrient loading, and storm events within the water supply basin. If a new surface water source is proposed, a source water assessment plan may be required to evaluate its suitability.

Finished water quality should be accounted for when considering QWS interconnections such that blended water does not cause mineral precipitates, unpalatable water, or corrosion of the system infrastructure components. If interconnections are designed for water to flow in one direction, reverse flows can be another source of undesirable finished water quality. Reverse flows may resuspend settled particles or dislodge pipe scale.

4.0 Emergency Planning Benchmarks

Total demand and reliability target values were calculated for current usage (2015, immediate reliability target) and future usage (2050, long-range reliability target). The total ADD was first calculated for each QWS based on the 2015 EPD-validated water audit values. In the event a QWS is not in that dataset, as identified in Table 2-3, QWS-provided values are reported. Then, tiered reliability targets were applied to each QWS's total demand to highlight where full supply of demand may not be available during some emergency scenarios. Redundant water supply may supplement existing water sources to meet demand during these scenarios.

4.1 Calculating Total Demand

Current total ADD was calculated as follows:

Total Demand = Raw Water Withdrawal
\+ Purchased Water (within county)
\+ Purchased Water (outside county)

The individual values were obtained through the data collection process identified in Section 2.1. Table 4-1 shows 2015 total demand and the values that sum to total demand, as well as 2050 total demand. Note that 2050 total demand is reported the same as 2050 ADD (Water Withdrawal Only) for QWS that do not purchase water. Section 3.1 and Appendix A describe the methodology for obtaining 2015 and 2050 ADD, which are presented in Table 3-1. The same methodology for obtaining 2050 ADD was used to obtain values for purchase-only QWS, and those calculations are described in Appendix A and shown in Table A-2 and Table A-3. Purchased water values were reported by QWS, and aggregate volumes were checked against the 2015 EPD-validated water loss audit, as available. Where available, total water used (including non-revenue water) is reported rather than billed water.

Total demand is counted for customers both internal and external (i.e., other QWS to which water is sold) to a QWS. For example, Hiawassee withdrew 1.18 MGD in 2015, of which 0.62 MGD was provided to Towns County. This 0.62 MGD is also reported for Towns County, which is appropriate because both Hiawassee and Towns County require that amount of water to meet their total demand.

4.2 Reliability Targets

The WSIRRA states that an emergency plan should "evaluate risks and, where feasible, plan for a district-wide interconnection reliability target for immediate implementation of approximately 35% of the ADD and long-range district-wide interconnection reliability planning goal of approximately 65% of the ADD" (Senate Bill 380). These general targets provided preliminary benchmarks for emergency planning in the study and the current (i.e., year 2015) and long-range (i.e., year 2050) water demands that were calculated for each QWS. Therefore, for consistency with the MNGWPD study, the following reliability targets were used:

- 100% ADD (total demand)
- 65% ADD
- 35% ADD

The 35% and 65% reliability targets correspond to estimated usage associated with essential water needs. GEFA has identified customers with essential water needs as: hospitals, nursing home/assisted living

facilities, correctional facilities, critical industries, and schools. It should be noted that demand includes both internal customers and external customers (i.e., other QWS to which water is sold).

Table 4-2 shows each reliability target applied to the 2015 and 2050 water demands. The reliability targets were not compared with actual QWS essential water needs; they were compared to the total ADD. QWS should verify what their essential water needs are as they may be less than the 35% and 65% reliability targets. If their essential water needs are greater than the 35% and 65% reliability targets, the QWS should plan to achieve higher targets for emergency scenarios.

5.0 Water Supply Risk Evaluations

Water supply risks and corresponding emergency scenarios were identified for a statewide effort. Therefore, not every risk and scenario apply to the Coosa-North Georgia Region. To carry out the screening, specific system deficiencies (in volumetric demand) of the emergency scenarios and supply goals were calculated. Whereas Section 4 presented a general overview of the overall water availability under the reliability targets, Section 5 provides more specific information about how those reliability targets are applied to each QWS under emergency situations. The intent of Section 5 is to evaluate the capability of a QWS to supply sufficient water during a given emergency. Deficiencies from emergency situations were quantified for each QWS for current and future conditions. The maximum deficit (Critical Scenario Deficit) was determined for each QWS.

5.1 Emergency Scenarios

Table 5-1 shows the statewide water supply risks and emergency scenarios. Scenarios were assigned a duration and an evaluation selection criterion. Some of the QWS in the Coosa-North Georgia Region treat groundwater at each withdrawal well. For the purposes of this study, an individual well that receives water treatment is classified as a WTP. Alternately, a groundwater QWS can be designed with two or more wells in parallel supplying raw water to one WTP, as is the case for several QWS including Cleveland and Rockmart. Water supply Risks A, B, C, D, G, and H are short-term defined durations, meaning less than 120 days, and often less than 3 days. Risks E and F are long-term undefined durations, meaning greater than 365 days and potentially having an indefinite duration.

Risks A through D are more traditional emergencies that are often addressed in an emergency response plan. These risks apply to systems that own drinking water infrastructure assets, whether they are pumps, WTPs, or distribution systems. These criteria were met for the QWS in this region, with exceptions for purchase-only QWS. Only Risks B and C applied to Fort Oglethorpe, Pickens County (2015), and Towns County.

Risks E and F apply to QWS that receive water directly from the Allatoona Lake/Etowah River or Lake Lanier/Chattahoochee River systems. These two risks relate to the tri-state water litigation. The following QWS meet the criteria: Baldwin draws from the Chattahoochee River; Etowah Water & Sewer Authority draws from the Etowah River; Rome draws from the Etowah River; and several QWS draw from tributaries to the Chattahoochee River or Etowah River. The WSIRRA states the "emergency plan shall evaluate risks..." related to, among other things, the unavailability of major raw water sources (O.C.G.A. Section 12-5-202(b)-(c)). These include QWS that use Lake Lanier/Chattahoochee River or Allatoona Lake/Etowah River as a raw water source. Georgia, Alabama, and Florida have disputed the use of two shared river basins, the Apalachicola-Chattahoochee-Flint (ACF) and the Alabama-Coosa-Tallapoosa (ACT). These river systems are used to meet multiple needs, including drinking water, power generation, agriculture, navigation, and recreation.

In 2009, U.S. District Judge Paul Magnuson ruled that Lake Lanier was not properly authorized to provide water supply to metro Atlanta. The ruling was ultimately reversed in 2011 by the 11th U.S. Circuit Court of Appeals. In 2013, Florida filed an original action against Georgia in the U.S. Supreme Court, requesting equitable apportionment of waters in the ACF Basin by claiming illegal harm to Apalachicola Bay. In April 2021, the Supreme Court denied Florida's request and Florida has not challenged the finding.

In 2015, the USACE updated the Water Control Manual for the ACT Basin. The Atlanta Regional Commission, the State of Georgia, and the Cobb County-Marietta Water Authority sued USACE because the updates did not address metro Atlanta's increased water supply needs, specifically from Lake Allatoona. The court ordered the USACE to further investigate and supply a record of decision by August 2021. The USACE ultimately granted metro Atlanta's supply requests.

At the same time, Alabama has filed suits against the USACE concerning both basins' Water Control Manuals. The ACT case is pending in Washington, D.C. and Alabama's ACF appeal is pending with the 11th U.S. Circuit Court of Appeals. These issues are vital to a proper evaluation of water supply risk. Therefore, Risks E and F were not evaluated further.

Risk G applies to surface water QWS that have a raw water supply from a dammed reservoir. In the Coosa-North Georgia Region, Risk G applied to Chatsworth, Cornelia, Dahlonega, Hiawassee, Notla Water Authority, Walker County, and White County.

Risk H was assessed for the most vulnerable surface water QWS during a drought scenario. Risk H is often addressed by local governments in a water conservation plan, which outlines consumer practices that are either encouraged (voluntary) or enforced. Further, EPD has drought management rules, consistent with rules and regulations of the State of Georgia Chapter 391-3-30, that require public water systems to follow drought response strategies and actions during specified levels of declared drought. It was assumed that available raw water supply for each QWS is 40% of ADD due to drought. The two screening criteria for Risk H are described below:

1. Small watersheds are defined as Hydrologic Unit Code (HUC)-10 watersheds less than 100 square miles (CH2M, Black & Veatch, 2017). The U.S. Department of Agriculture's Natural Resources Conservation Service Geospatial Data Gateway was used to obtain GIS data. Specifically, the shapefile "10 Digit Watershed Boundary Dataset in HUC8" was used to calculate square mileage for HUC-10 watersheds.
2. Strahler Stream Order is a hierarchical method of categorizing streams by size. Strahler Stream Orders range from 1 (headwaters with no tributaries) to 12 (e.g., mouth of the Amazon River). For consistency with USGS literature about Georgia rivers (Elliott et al., 2014), major rivers in this study are defined as being Strahler Stream Order 6 or greater. The National Hydrography Dataset Plus, developed and maintained by the U.S. Environmental Protection Agency and USGS, is a collection of GIS and geospatial databases. It contains Strahler Stream Order as a "value added attribute," which was used to identify major rivers for the Coosa-North Georgia Region.

To meet the Risk H criteria, a QWS would need to have 1) a dammed reservoir in small watershed; and/or 2) withdrawal is not from a major river. Both criteria were met for Chatsworth and Dahlonega, and the second criterion was met for Baldwin, Blairsville, Blue Ridge, Clarkesville, Dade County, Ellijay-Gilmer County, Etowah Water & Sewer Authority (2015), Floyd County, Jasper, McCaysville, and Summerville. Therefore, Risk H applies to some surface water QWS in the Coosa-North Georgia Region (see Appendix B for QWS-specific explanations).

5.2 Methodology

Water supply risk evaluations were performed to understand the capability of a QWS to supply sufficient water during a given emergency. WTP capacity and QWS demand values reported correspond to the values and concepts described in Sections 3 and 4. Note that the reliability target values were determined

as described in Section 4.2. They are constants that do not depend on the emergency scenarios. The following process was performed for both 2015 and 2050 water supply risk evaluations.

Deficit was calculated as follows:

Deficit = Available Water Supply
- Reliability Target Demands

Where:

Available Water Supply = Peak Day Design Capacity
+ Maximum Possible Purchased Water Supply
+ Stored Water (Scenarios A1, B, D1, D2)
- Capacity Loss Due to Emergency

For a given QWS, each WTP peak day design capacity was identified as described in Appendix A. For surface water QWS, the smaller of the peak day design capacity value and the peak permitted withdrawal value (24-hr maximum) was used for the available water supply calculation. For this region, permit limits affected some available water supply calculations. The maximum possible purchased water supply (applicable to QWS with interconnections) and stored water (applicable only to Scenarios A1, B, D1, and D2) were then added. Other than water supply Risk C, each emergency scenario prescribes a situation that involves a QWS-wide capacity loss (e.g., critical asset failure). The available water supply is thus the capacity remaining after the loss was subtracted and the source, purchased, and stored water were added, as applicable.

The deficit for both 2015 and 2050 was then calculated by subtracting the reliability target demands from the available water supply. In the case of a negative deficit, meaning there is more available water supply than demand, the deficit is reported as zero.

5.3 Key Assumptions

Table 5-1 presents key assumptions specific to each scenario. The following key assumptions apply to all scenarios and the corresponding deficit calculations:

- Only one QWS-wide emergency occurs at a time (i.e., Scenarios A1 and C do not occur simultaneously).
- Only one region-wide emergency occurs at a time (i.e., both Cave Spring and Polk County do not experience an emergency) except for Risk H (drought).
- The 2050 available water supply accounts for additional capacity due to planned capital improvements. (Royston provided an estimated increase in water capacity due to planned capital improvements.)
- Under an emergency scenario, QWS permit restrictions are followed.
    - For groundwater withdrawal permits, a daily peak can be above the permitted limit if the annual and monthly average withdrawals are below their respective limits. Scenario A2 (30 days) is the only applicable scenario in which monthly average emergency withdrawals may approach permit limits. All groundwater QWS in this region have backup equipment available, rendering no capacity loss for Scenario A2. Therefore, permit limits are assumed to be followed.

  - For surface water withdrawal permits, a daily peak must adhere to the 24-hour maximum withdrawal limit. If a longer emergency scenario requires a QWS to exceed their permitted withdrawal limit, QWS may do so given EPD approval. Under Water Quality Control Rule 391-3-6-.07(9)(b), systems may receive a temporary permit modification to exceed existing permitted withdrawal limits for emergencies lasting less than 180 days (Ga. Comp. R. & Regs. r. 391-3-6-.07).
- As applicable, a QWS indefinitely maintains its current infrastructure, backup power, and backup equipment.
- As applicable, a QWS indefinitely maintains its current permitted withdrawal limits and existing water sale/purchase contracts and interconnections.

5.4 Evaluation Results

Table 5-2 summarizes calculated deficits by QWS for 2015 and 2050. As noted above, Risks A, B, C, D, G, and H applied to the Coosa-North Georgia Region. Nine QWS had a 2015 total demand deficit (i.e., 100% ADD): Baldwin, Blue Ridge, Chatsworth, Cornelia, Dade County, Dahlonega, Ellijay-Gilmer County, Hiawassee, and McCaysville. Baldwin's, Blue Ridge's, and McCaysville's capacity losses caused a 65% ADD deficit. Cornelia's, Dahlonega's, and Hiawassee's capacity losses caused 65% ADD and 35% ADD deficits. Fifteen QWS had a 2050 total demand deficit: Baldwin, Blue Ridge, Chatsworth, Clarkesville, Coosa Water Authority, Cornelia, Dade County, Dahlonega, Demorest, Ellijay-Gilmer County, Hiawassee, McCaysville, Notla Water Authority, Towns County, and White County. Blue Ridge's, McCaysville's, and Towns County's capacity losses caused 65% ADD deficit. Baldwin's, Cornelia's, Dahlonega's, and Hiawassee's capacity losses caused 65% and 35% ADD deficits. Detailed available water supply and deficit calculations by QWS are provided in Appendix B. Figure 5-1 is a summary schematic of QWS 2050 ADD, deficits, and interconnections. This figure demonstrates QWS potential future water withdrawal and sharing.

Surface water QWS in the Coosa-North Georgia Region perform less favorably when faced with the emergency scenarios because their often single WTP design lacks inherent redundancy. Chemical treatment redundancy and unit process redundancy can be part of the WTP design, but Risks G and H are especially difficult to address for surface water QWS in this region.

Groundwater QWS in the Coosa-North Georgia Region tend to perform well when faced with the emergency scenarios because their multi-well, multi-WTP design offers inherent redundancy. This means that if one WTP fails, large portions of a system will not be without water.

For QWS experiencing more than one deficit, the highest deficit with the longest duration scenario and/or relative likelihood scenario, or the Critical Scenario Deficit, was selected for further evaluation. The Critical Scenario Deficit, if applicable, is highlighted in gray in Table 5-2.

6.0 Evaluation of Potential Projects

The water supply risk evaluations estimated the immediate and long-range potential emergency deficits for each QWS in the Coosa-North Georgia Region. As described in Section 5.4 and Table 5-2, fifteen Coosa-North Georgia QWS have a 2050 deficit, and the Critical Scenario Deficit was selected for further evaluation. If a QWS does not have a Critical Scenario Deficit, the scenario(s) rendering a given QWS with the least available water supply was/were further evaluated. Potential conceptual-level redundancy projects were developed for a QWS based on their reduced water supply, available information, cost of implementation, and other criteria. These projects may include, but are not limited to, internal infrastructure redundancy, new interconnections, and upgrades to existing interconnections.

6.1 Potential Projects

Emergency scenarios affecting QWS, as detailed in Appendix B, were evaluated for the feasibility of a potential project to address capacity losses. The exception to this project recommendation criterion is for purchase-only QWS. It is recommended that purchase-only QWS, together with their supplier(s), evaluate where and when to upgrade infrastructure to meet their future total demand. Thus, not all QWS have recommended projects. This was done to prioritize logical, implementable projects for QWS with less available water supply relative to other QWS. The starting point for identifying a potential project is deciding if it will be an interconnection project (new or upgrade to existing) or internal infrastructure redundancy project. For potential projects, the following considerations were taken, as applicable:

- Potential environmental impacts
- Withdrawal permit impacts
- Water quality impacts
- Community impacts

The above four considerations are applicable to interconnection projects. Interconnection projects can address emergency scenarios A1, A2, B, D1, D2, G, and H. Depending on the project, the above four considerations are sometimes applicable to internal infrastructure redundancy projects. Table 6-1 identifies certain internal infrastructure redundancy projects for certain emergency scenarios.

For the Coosa-North Georgia Region, four types of projects are recommended: 1) new interconnection, 2) upgrade to existing interconnection, 3) new well and groundwater WTP (which includes a backup generator) to supply internal infrastructure redundancy; and 4) new raw water transmission main and surface water withdrawal to supply internal infrastructure redundancy. Interconnection projects support the Coosa-North Georgia Water Planning Council's Management Practice WS-6: "consider construction of new WTPs or expansion of existing WTPs" because one of the short-term implementation actions is to "continue to assess the existing and proposed interconnection for redundancy and regional water supply potential to supply increased demand" (Coosa-North Georgia Water Planning Council, 2017). New well and groundwater WTP projects support Management Practices WS-6 (described above) and WS-4: consider development of new groundwater wells. Internal infrastructure redundancy projects highlight the potential for a future management practice: encourage public water systems to enhance their water supply redundancy and treatment/unit process redundancy. Table 6-2 shows the potential projects and provides the emergency scenarios addressed, maximum capacity added, and impact considerations.

Potential environmental impacts vary widely across project types. Designations and impacts by project type are detailed below.

- For interconnection projects, impacts due to excavation (for pipelines), stream crossings, and wetlands disturbance were considered, as applicable. The relative difficulty of permitting steps is implied for the following designations. A "low" designation was applied to a potential project if known streams/wetlands are not likely affected and if offsite excavation is less than 200 feet. A "medium-low" designation was applied if known streams/wetlands are not likely affected and if offsite excavation is greater than 200 but less than 5,000 feet. A "medium-high" designation was applied if known streams/wetlands may be affected and/or if offsite excavation is greater than 200 but less than 5,000 feet. A "high" designation was applied if more than 5,000 feet of offsite excavation is needed and/or wetlands are likely affected and/or a stream crossing is likely needed. A list of threatened/endangered species was not compiled for each potential project. Prior to construction, a review of site-specific threatened/endangered species should be conducted. Cost and permitting requirements may increase if species or critical habitats are impacted.
- Existing interconnections that would be upgraded, without extensive pipe replacement, are assumed to be in the "low" potential environmental impact designation.
- For new well and WTP projects, impacts due to drilling, regional groundwater resource gaps, and excavation (for pipelines) were considered, as applicable. A "medium-low" designation was applied as the baseline due to drilling/excavation-related activities. Designations were applied for regional resource gaps by aquifer: "medium-low" was applied if no gaps were identified; "medium-high" was applied if aquifer withdrawals are within the aquifer's estimated sustainable yield; "high" was applied if aquifer withdrawals are above the aquifer's estimated sustainable yield. Designations were applied for excavation in the same way as interconnection projects.
    - The new well and WTP projects considered for this region include a backup generator. The potential environmental impacts of a backup generator include fuel storage, stormwater runoff control, and air permitting requirements. Cost and permitting requirements may increase depending on QWS-specific site conditions, electrical loading requirements, and electrical infrastructure layout.
- For new raw water transmission main projects, the same potential environmental impact designations as interconnection projects were applied.
    - Further described in Section 6.1.2, Project 3 is a raw water transmission main and surface water withdrawal for Blue Ridge that will supply internal infrastructure redundancy in the event the Toccoa River lacks sufficient flow due to Risk H. The new withdrawal location would need to be approved by EPD and the Tennessee Valley Authority even though the cumulative permit limits would potentially not be increasing. Obtaining a new surface water permit can be a challenging process. In addition to unknown water withdrawal effects, protected species impingement and/or entrainment are potential environmental impacts. Due to these unknowns and the planning-level nature of potential projects, additional potential environmental impacts of a new pumping location (beyond landward transmission mains) are not included.

Water withdrawal permit factors are described in Section 3.5.2. The QWS' 2050 ADD was compared to current peak permitted withdrawal limits (Table 3-1) to understand their ability to supply water to another QWS experiencing an emergency. Note that 24-hour maximum permitted withdrawal for surface water

QWS and monthly average permitted withdrawal for groundwater QWS are higher than annual average permitted withdrawal. Using peak values is appropriate because of the short-term, defined duration scenarios considered. Pickens County is a purchase-only QWS, while Demorest obtains most of its water supply from regular purchases. In order to reflect potential withdrawal permit and purchased water impacts for these QWS, the maximum possible purchased water value was used, plus the peak permitted withdrawal limit (applicable to Demorest and Pickens County for 2050 QWS conditions), minus the amount purchased from the beneficiary QWS of a potential project. For example, Project 7 is a new interconnection between Cornelia and Demorest. Because Cornelia also supplies Demorest, the maximum possible purchased water value from Cornelia was subtracted from Demorest's total (all suppliers) maximum possible purchased water value. A "low" designation was applied to a potential project if permitted/purchased values would not limit the maximum capacity added. A "medium-low" designation was applied if combined values would limit the maximum capacity added by 1-49%, and a "medium-high" designation was applied if combined values would limit the maximum capacity added by 50-99%. A "high" designation was applied if combined values would completely limit the maximum capacity added.

Water quality factors are described in Section 3.5.3. A "low" designation was applied to a potential project if water treatment (e.g., treatment chemicals, chemistry, and processes) is compatible between QWS. For example, if chlorination and fluoridation, a common treatment scheme for groundwater systems, are used at both QWS. A "medium-low" designation was applied if one water treatment type differs between QWS, and a "medium-high" designation was applied if two water treatment types differ. A "high" designation was applied if water treatment significantly differs between QWS. For example, if three or more treatment types differ or if groundwater QWS and surface water QWS exchange water. If an interconnection project progresses beyond the planning-level evaluation discussed in this report, water chemistry analyses and hydraulic flow modeling should be conducted to assess both systems' abilities to exchange water.

Community impacts include excavation, easement/right of way acquisition, and multijurisdictional agreements. For the purposes of this project, easement/right of way considerations are included in approximated offsite excavation distances. A "low" designation was applied to a potential project if it occurs entirely on QWS property. A "medium-low" designation was applied if offsite excavation is less than 200 feet and/or a multijurisdictional agreement is needed. A "medium-high" designation was applied if offsite excavation is greater than 200 but less than 5,000 feet and/or a multijurisdictional agreement is needed. A "high" designation was applied if offsite excavation is more than 5,000 feet and/or a multijurisdictional agreement is needed.

6.1.1 Interconnections

Nine interconnection projects were evaluated. QWS modifications for interconnection projects include connecting, metering, pumping, and operation and maintenance requirements of new pipelines, booster pump stations, and associated appurtenances. The maximum capacity added (in MGD) from a potential project is an important factor that depends on each specific project's details. Interconnection project pipe diameter, average system pressure, QWS future excess capacity, and maximum capacity added are detailed in Table 6-3. Additional information is provided below.

- Project 1 – Baldwin and Cornelia QWS water mains are within 40 linear feet and one interconnection option exists near the intersection of Baldwin Road and Airport Road. Figure 6-1 shows large-scale available mapping data for these QWS. Baldwin's existing pipe diameters in the area of interest are unknown. Cornelia's existing pipe diameters in the area of interest are

8 inches. Approximately 40 feet of 8-inch diameter ductile iron pipe (DIP) are estimated for this project.

- Project 2 – Coosa Water Authority and Blairsville QWS are within 0.9 linear mile and one interconnection option exists along Blue Ridge Highway. Figure 6-2 shows large-scale available mapping data for these QWS. Mapping data were unavailable for Blairsville, so it was assumed that their distribution system is within the Blairsville city limits. Coosa Water Authority's existing pipe diameters in the area of interest are 2 inches to 6 inches. Blairsville's existing pipe diameters in the area of interest are unknown. Approximately 1.7 miles of 6-inch diameter DIP are estimated for this project, which includes approximately 0.8 mile of replacement pipe in Coosa Water Authority's distribution system. Water head loss due to pipe friction, pipe bends, and elevation changes becomes a more important factor when pipelines extend for longer distances. Booster pump stations are needed to overcome head losses. A 50-horsepower booster pump station was estimated to convey water from Coosa Water Authority to Blairsville and from Blairsville to Coosa Water Authority.
- Project 4 – Chatsworth and Calhoun QWS are interconnected along Maple Grove Church Road. It is currently an 8-inch diameter, one-way interconnection into Chatsworth. The interconnection is hydraulically limited to 0.3 MGD. To upgrade the interconnection, a 50-horsepower booster pump station would be added, and the existing control valve station and associated appurtenances would be updated to reverse flow through existing pipes. The upgrade would allow the pipe's full capacity (1.13 MGD) to flow from Calhoun to Chatsworth and from Chatsworth to Calhoun during an emergency.
- Project 5 – Clarkesville and Demorest QWS water mains are within 30 linear feet and one interconnection option exists near the intersection of Highway 197 and Canterberry Trail. Figure 6-3 shows large-scale available mapping data for these QWS. Clarkesville's existing pipe diameters in the area of interest are 6 inches. Demorest's existing pipe diameters in the area of interest are 2 inches to 6 inches. Approximately 30 feet of 6-inch diameter DIP are estimated for this project.
- Project 7 – Cornelia and Demorest QWS water mains are within 30 linear feet and multiple interconnection options exist near Historic U.S. 441, northwest of Highway 23. Figure 6-4 shows large-scale available mapping data for these QWS. Cornelia's existing pipe diameters in the area of interest are 2 inches to 10 inches. Demorest's existing pipe diameters in the area of interest are 2 inches to 8 inches. Approximately 30 feet of 8-inch diameter DIP are estimated for this project.
- Project 9 – Dahlonega and Etowah Water & Sewer Authority QWS water mains are within 5.2 linear miles and one interconnection option exists along Highway 19. Figure 6-5 shows large-scale available mapping data for these QWS. Dahlonega's existing pipe diameters in the area of interest are 6 inches to 10 inches. Etowah Water & Sewer Authority's existing pipe diameters in the area of interest are 6 inches to 8 inches. Approximately 5.2 miles of 8-inch diameter DIP are estimated for this project. A 100-horsepower pump was estimated to convey water from Dahlonega to Etowah Water & Sewer Authority and from Etowah Water & Sewer Authority to Dahlonega.

- Project 10 – Demorest and White County QWS water mains are within 3,000 linear feet and one interconnection option exists along Clarksville Highway/Highway 115. Figure 6-6 shows large-scale available mapping data for these QWS. Demorest's existing pipe diameters in the area of interest are 6 inches. White County's existing pipe diameters in the area of interest are 10 inches. Approximately 3,000 feet of 6-inch diameter DIP are estimated for this project. A 50-horsepower pump was estimated to convey water from Demorest to White County and from White County to Demorest.
- Project 11 – Ellijay-Gilmer County and Pickens County QWS water mains are within 5.8 linear miles and one interconnection option exists along Round Top Road, Knight Road, and Barnes Mountain Road. Figure 6-7 shows large-scale available mapping data for these QWS. Ellijay-Gilmer County's existing pipe diameters in the area of interest are 10 inches. Pickens County's existing pipe diameters in the area of interest are 8 inches. Approximately 5.8 miles of 8-inch diameter DIP are estimated for this project. A 200-horsepower pump was estimated to convey water from Ellijay-Gilmer County to Pickens County and from Pickens County to Ellijay-Gilmer County.
- Project 13 – Hiawassee and Towns County QWS are interconnected at the intersection of Highway 76 and Highway 288. It is currently a 6-inch diameter, one-way interconnection into Towns County. To upgrade the interconnection, the existing control valve station and associated appurtenances would be updated to reverse flow through existing pipes. Towns County is a purchase-only system, primarily purchasing water from Hiawassee, and also has an emergency incoming interconnection with Clay County, North Carolina. The upgrade would allow water to flow from Clay County to Hiawassee during an emergency.

If a QWS' future excess capacity and/or permit withdrawal limits are less than the maximum capacity added, it was assumed that the QWS would increase its future supply.

The above-mentioned interconnection projects are not a comprehensive list of all possible interconnections. Per Table 2-2, mapping data were not available or not complete for all QWS. Therefore, only select interconnections are discussed where data are available.

6.1.2 Internal Infrastructure Redundancy

As shown in Table 6-2, potential Projects 6, 8, 12, 14, and 15 are new well(s) and groundwater WTP projects to supply internal infrastructure redundancy. This project type can address emergency scenarios A1, A2, B, D1, D2, G, and H. QWS modifications for new well and WTP projects include the ability to site and manage a new well/WTP, connect treated water to the distribution system, and potentially increase permit limits. The maximum capacity added (in MGD) was estimated based on QWS-specific information. Except for Dade County, which can withdraw from Paleozoic aquifers, these QWS can only withdraw from crystalline rock aquifers. Therefore, a water pumping study would be needed to see if the local crystalline rock aquifer has sufficient yield for QWS needs. Due to relatively small yields of crystalline rock aquifers, it is estimated that two new wells (feeding one WTP) would be needed to reach sufficient added capacity for Hiawassee (Project 12), McCaysville (Project 14), and Notla Water Authority (Project 15). Hiawassee and McCaysville currently do not hold groundwater withdrawal permits and they would each need to obtain one. Coosa Water Authority (Project 6), Dade County (Project 8), and Notla Water Authority would need to increase their permitted groundwater withdrawal amount. Except for Dade County, these QWS do not

have a portable generator capable of powering the proposed new well/WTP. Therefore, a generator was included in Projects 6, 12, 14, and 15.

Project 3 is a new raw water transmission main and surface water withdrawal for Blue Ridge that will supply internal infrastructure redundancy in the event the Toccoa River lacks sufficient flow due to Risk H. The QWS holds a permit to withdraw raw water from the Toccoa River, just downstream of Blue Ridge Lake. This potential project adds a raw water transmission main and surface water withdrawal from Blue Ridge Lake, near the dam, to the WTP. QWS modifications for this project include connecting, metering, pumping, and operation and maintenance requirements of new pipelines, pumps, and associated appurtenances. Two new 500 gpm (gallons per minute) (0.72 MGD) raw water vertical turbine pumps and approximately 2,000 feet of 10-inch diameter DIP are estimated for this project. The maximum capacity added (in MGD) was estimated as the maximum total pumping capacity of the new raw water pumps. This is because the capacity added would be limited by the pumps rather than pipe parameters or the WTP peak day design capacity. Therefore, this capacity is more accurately described as "capacity not lost" because the capacity added does not increase Blue Ridge's peak day design capacity.

6.2 Planning-Level Costs

Planning-level costs were estimated for potential redundancy projects in one of three ways: RSMeans (a construction cost estimating software), manufacturer prices, or the EPD *Supplemental Guidance for Planning Contractors: Water Management Practice Cost Comparison*. Estimated unit prices represent rough order of magnitude project prices based on assumptions summarized in the following sections. A macro-level, approximate project timeframe in months was also scoped out for each project. For interconnection and raw water transmission main projects, it was assumed that multijurisdictional agreements and procurement would take 6 months, engineering design and hydraulic modeling would take 4 months, and procurement of materials and construction would take a minimum of 2 months. If a project requires a booster pump station, an extra 4 months was added to the materials procurement and construction time. For new well and WTP projects, it was assumed that procurement and permitting would take approximately 6 months, engineering design and hydraulic modeling would take approximately 4 months, and drilling and construction would take a minimum of 2 months. Planning-level costs and macro-level timeframes are presented in Table 6-4.

6.2.1 Interconnections

Pipeline costs were estimated per linear foot of pipe. Manufacturer prices were obtained for several standard DIP sizes between 4 and 60 inches. Prices were adjusted to include a 20% mark-up for taxes and contractor overhead and profit. RSMeans was used to estimate excavation, backfill, and installation costs. Erosion control, sediment control, site clearing, and site grading considerations were also included. Construction mark-ups, including mobilization, temporary facilities, quality control testing, administration, and oversight, were 23% and applied to the subtotal construction unit prices. Additional mark-ups, including engineering design, permitting, and overall contingency, were 31% and applied to the subtotal construction unit prices and construction mark-ups. These cost estimates do not include land acquisition costs.

An underground concrete vault was assumed for interconnection locations such that valves can be manually opened/closed. RSMeans was used to estimate concrete vault construction, valves, water meters, and associated appurtenances. Mark-ups include installation mark-ups and overall contingency.

RSMeans was used to estimate booster pump and motor costs, while a parametric cost estimating formula was used to estimate booster pump station (structure, appurtenances, electrical system) costs. Mark-ups include construction mark-ups, engineering design, and overall contingency.

For upgrading existing interconnections, a value was estimated to encompass potential work involved based on engineering judgement. This value is consistent with the MNGWPD study, and the value will need to be adjusted based on site-specific information.

In addition to water head loss, operational pressure differences between interconnections may require a booster pump station or additional appurtenances to establish a functional interconnection. Therefore, hydraulic modeling is necessary to establish interconnection feasibility before a project can advance beyond this planning-level stage.

6.2.2 Internal Infrastructure Redundancy

New well and WTP costs were estimated from the EPD supplemental guidance document. The document provides unit costs for anticipated water management practices, of which "WS-3 New Groundwater Sources" and "WT-1 Water Treatment Plant (New)" were applicable (EPD, 2011). The middle-range cost was assumed to be representative for this region's proposed new wells and the low-range cost was assumed to be representative for their proposed new WTPs because of the relatively fewer treatment components for groundwater WTPs. The 2011 costs were brought to 2021 dollars using the Engineering News-Record's Construction Cost Index. The unit costs were multiplied by the number of units (e.g., 0.20 MGD for Coosa Water Authority's maximum capacity added) and the sum appears as the additional cost in Table 6-4. Applicable pipeline and generator costs were also estimated for this project type.

The generators considered have a standby rating, meaning they can supply power for short-term, defined durations, as opposed to a prime rating, which is meant for power needs when a system is not regularly wired to the electrical grid. QWS-specific electrical loads and configurations are needed to accurately scale and cost a generator project. Therefore, a relationship between known QWS peak day design capacity and generator power was developed to estimate the generator power needed for a proposed project. Prices were then estimated based on generator power needed.

Applicable pipeline costs for new raw water transmission mains were estimated in the same way as interconnection projects. RSMeans was used to estimate raw water vertical turbine pumps.

7.0 Recommended Projects

Once potential projects were identified and planning-level costs were estimated, potential projects were then prioritized based on performance under weighted quantitative and qualitative criteria. Using a decision-based prioritization tool, absolute and weighted scores were calculated for each potential project. The options were then ranked using defined criteria (e.g., cost, potential environmental impacts). A sensitivity analysis was undertaken to test the influence of the criteria weightings on the project rank outcome. Ranking reflects projects that will most benefit the Coosa-North Georgia Water Planning Region as a whole.

7.1 Prioritization Approach

Potential project prioritization was done to compare complex information among QWS. Quantitative and qualitative scoring criteria and weighting were selected to reflect the objectives of the redundancy study. Table 7-1 presents the scoring criteria and their weighting.

Scores were assigned either 1, 2, 3, or 4. A score of 1 implies a lower overall benefit of a potential project (e.g., relatively low maximum capacity added, high cost, and high impacts), while a score of 4 implies a higher overall benefit of a potential project (e.g., relatively high maximum capacity added, low cost, and low impacts). For interconnection projects, which may have the capacity to benefit multiple water systems, select criteria were assigned the average of the two interconnecting system scores, as applicable. These criteria include Criterion 4 (Added Capacity as a Percent of Total Demand), Criterion 7 (Potential System and Community Impacts), and Criterion 8 (Excess Capacity Index). For example, Project 2 (Baldwin – Cornelia interconnection) received a Criterion 4 score of 1 for Baldwin and 2 for Cornelia. The assigned score was the average of these individual scores, resulting in a score of 1.5. For Criterion 3 (Critical Scenario Duration), if no Critical Scenario Deficit exists and if multiple scenarios are addressed, the highest day duration of the scenarios addressed was used to assign a score. Non-weighted values were summed and divided by the applicable number of criteria to obtain an absolute score. The larger the absolute score, the more beneficial the potential project.

Criterion weights were assigned either 1, 2, or 3, with 1 holding less decision weight and 3 holding the most decision weight. Initial weights were assigned based on professional judgement and later tested with a sensitivity analysis. Criterion scores were multiplied by criterion weights. Values were summed and divided by the applicable number of criteria to obtain a weighted score. The larger the weighted score, the more beneficial the potential project.

Table 7-2 shows each criterion metric and its corresponding assigned score for this region's potential projects, as well as their absolute and initial weighted scores. In addition, cost per 1 MGD yield and cost per individual supplied were calculated. Table 7-3 is a decision-making summary to present the decision metrics for each potential project. An initial manual rank was assigned to each potential project based on initial weighted scores.

7.2 Sensitivity Analysis

A sensitivity analysis was conducted to test the influence of criterion weightings on the initial manual rank outcome. First, all criteria were assigned the highest weight (3). The effect of this weighting adjustment is equivalent to the absolute score because although it amplified score values, the rank outcome was the same. Second, one of the eight criteria was assigned the highest weight (3) with the remaining seven

criteria assigned the lowest weight (1). In the case of a tie, the absolute score was considered, and in the case of a further tie, the lower cost per individual supplied broke the tie. The effects of these weighting variations are described in Appendix C. The sensitivity analysis results demonstrate that some criteria are sensitive to weighting. Initially assigned weights were retained nonetheless, and sensitivity analysis results can qualify the weighted scores.

7.3 Recommended Projects

With weighting reasonably assigned, the final manual ranks equal the initial manual ranks, which appear in Table 7-3. It is recommended that decision making priority be given to potential projects with higher rank order because the order accounts for the foremost quantitative and qualitative criteria pertinent to water supply redundancy.

Regarding interconnection projects, fair and equitable project cost allocation to each beneficiary can be achieved in several ways. First, if an interconnection primarily benefits one QWS (purchaser), that QWS will likely bear the majority of costs. The provider QWS will financially benefit if water is sold to the purchaser; thus, the provider may bear some of the costs. Second, if an interconnection primarily benefits one QWS but also adds redundancy for the provider QWS, the provider QWS may bear further costs, such as assisting with immediate costs and/or operation and maintenance costs. Third, if an interconnection mutually benefits both QWS, a cost allocation strategy would be appropriate. Such strategies can be based on QWS population served, ADD, added capacity as a percent of total demand, or other creative approaches.

7.4 Conclusion

The purpose of the Water Supply Redundancy Study is to increase Georgia's water supply solvency and reliability. This study evaluated drinking water supply, demand, treatment, storage, distribution, and interconnectivity to identify redundant water supply sources capable of providing backup water supply for each QWS.

Thirty-five QWS in the Coosa-North Georgia Water Planning Region were evaluated for water supply redundancy. QWS data were collected, summarized, and evaluated for current and future conditions. Redundant water supply sources were explored, and water supply risk evaluations were conducted. Potential redundancy projects were conceptualized and costed for QWS left with notably reduced water supply during an emergency scenario. Potential projects were scored via a decision-based prioritization tool using weighted quantitative and qualitative criteria and subsequently ranked. Table 7-4 presents the potential projects sorted by final rank order. This study illustrated opportunities for improved QWS water supply redundancy and resiliency when faced with potential emergencies in the Coosa-North Georgia Water Planning Region.

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TABLES

Table 2-1
Key General Information

County	Qualified Water System	Public Water System Identification Number	Estimated Population Directly Served[1]	Estimated Consecutive Population Served[2]	Raw Water Source(s)[3]	Regular Purchases 2015-2019[4]	Irregular / Emergency Purchases 2015-2019[4]	Regular Sales 2015-2019[4]	Irregular / Emergency Sales 2015-2019[4]
Habersham	Baldwin	GA1370001	3,900	12,600	Surface Water (1)	Cornelia	-	Demorest	-
Union	Blairsville	GA2910000	2,600	0	Surface Water (1) Groundwater Wells (4)	-	-	-	-
Fannin	Blue Ridge	GA1110000	7,500	500	Surface Water (1)	-	McCaysville (2015-2018)	Fannin County	-
Gordon	Calhoun	GA1290000	49,000	13,700	Surface Water (2) Spring (1) Groundwater Wells (2)	-	-	Floyd County Chatsworth Pickens County (2015-2018)	-
Catoosa	Catoosa Utility District Authority	GA0470000	52,700	3,900	Spring (1)	Tennessee American Water Co. (TN) Eastside Utility District (TN)	-	Ringgold LaFayette Dalton	Walker County
Floyd	Cave Spring	GA1150000	3,700	3,500	Spring (1)	=-	-	Northeast Alabama Water Auth. (AL)	-
Polk	Cedartown	GA2330000	9,900	0	Spring (1)	-	-	-	-
Murray	Chatsworth	GA2130000	24,400	100	Surface Water (1) Spring (2) Groundwater Wells (1)	Dalton Calhoun Ocoee Utility District (TN)	-	Dalton	-
Chattooga	Chattooga County	GA0550000	8,800	0	Groundwater Wells (7)	-	Fort Payne (AL) (2017-2019)	-	Lyerly Walker County-Armuchee Valley
Walker	Chickamauga	GA2950000	5,100	0	Groundwater Wells (1)	-	Walker County	-	-
Habersham	Clarkesville	GA1370002	5,600	0	Surface Water (1)	-	Demorest (2016-2018)	-	-
White	Cleveland	GA3110000	4,100	0	Groundwater Wells (4)	White County	-	-	White County (2018-2019)
Union	Coosa Water Authority	GA2910006	5,300	0	Groundwater Wells (4)	-	-	-	-
Habersham	Cornelia	GA1370003	6,800	500	Surface Water (2)	-	Demorest	Baldwin	Mt. Airy
Dade	Dade County	GA0830000	18,700	0	Surface Water (1) Groundwater Wells (1)	-	-	-	-
Lumpkin	Dahlonega	GA1870000	7,000	500	Surface Water (1)	-	-	Lumpkin County	-
Whitfield	Dalton	GA3130000	92,500	4,300	Surface Water (5) Spring (1)	Catoosa Utility District Authority Eastside Utility District (TN) Chatsworth	-	Chatsworth	

Table 2-1
Key General Information

County	Qualified Water System	Public Water System Identification Number	Estimated Population Directly Served[1]	Estimated Consecutive Population Served[2]	Raw Water Source(s)[3]	Regular Purchases 2015-2019[4]	Irregular / Emergency Purchases 2015-2019[4]	Regular Sales 2015-2019[4]	Irregular / Emergency Sales 2015-2019[4]
Habersham	Demorest	GA1370004	17,200	500	Wholesale Purchased Groundwater Wells (2)	Baldwin Toccoa	-	Tallulah (2018-2019)	Alto (2016-2019) Cornelia Clarkesville (2016-2018) Mount Airy (2015-2016, 2018-2019)
Gilmer	Ellijay-Gilmer County	GA1230000	13,000	2,900	Surface Water (2)	-	-	Walnut Mountain POA Eagles Mountain Campground	Pickens County (2019)
Dawson	Etowah Water & Sewer Auth.	GA0850007	16,200	500	Surface Water (1)	Cherokee County	Forsyth County	Lumpkin County[5]	-
Floyd	Floyd County	GA1150001	41,900	0	Surface Water (1) Spring (1) Groundwater Wells (2)	Calhoun Rome	Adairsville (2015-2017)	-	-
Catoosa	Fort Oglethorpe	GA0470001	7,900	0	Wholesale Purchased	Tennessee American Water Co. (TN)	-	-	-
Towns	Hiawassee	GA2810000	5,000	10,900	Surface Water (1)	-	-	Towns County	-
Pickens	Jasper	GA2270000	11,800	1,800	Surface Water (1) Groundwater Wells (2)	Pickens County (2016-2019)	Cherokee County (2016-2019)	Pickens County	-
Walker	LaFayette	GA2950002	16,000	0	Spring (1) Groundwater Wells (1)	Catoosa Utility District Authority Walker County	-	-	-
Fannin	McCaysville	GA1110001	8,100	300	Surface Water (1)	-	-	Copperhill	-
Union	Notla Water Authority	GA2910003	15,600	0	Surface Water (1) Groundwater Wells (4)	-	-	-	-
Pickens	Pickens County	GA2270002	7,200	400	Wholesale Purchased	Cherokee County Jasper Calhoun Big Canoe Gilmer County	Cherokee County Big Canoe	Cherokee County Fairmount Jasper (2016-2019)	Big Canoe
Polk	Polk County	GA2330001	24,100	500	Spring (4) Groundwater Wells (1)	Haralson County Paulding County	-	Bartow County	-
Polk	Rockmart	GA2330002	3,400	0	Groundwater Wells (3)	-	-	-	-
Floyd	Rome	GA1150002	48,100	200	Surface Water (2)	Floyd County (2015, 2019)	-	Floyd County	
Chattooga	Summerville	GA0550003	9,600	0	Surface Water (1) Spring (1)	-	-	-	-

Table 2-1
Key General Information

County	Qualified Water System	Public Water System Identification Number	Estimated Population Directly Served[1]	Estimated Consecutive Population Served[2]	Raw Water Source(s)[3]	Regular Purchases 2015-2019[4]	Irregular / Emergency Purchases 2015-2019[4]	Regular Sales 2015-2019[4]	Irregular / Emergency Sales 2015-2019[4]
Towns	Towns County	GA2810007	10,900	0	Wholesale Purchased	Hiawassee	-	-	-
Walker	Walker County	GA2950003	28,600	4,500	Surface Water (1) Groundwater Wells (8)	-	-	LaFayette	Chickamauga
White	White County	GA3110072	4,400	6,800	Surface Water (1)	-	Cleveland (2018-2019)	Cleveland Helen Mt. Yonah Scenic Estates Cleveland	Timberland Huckleberry Hills Strong Rock Camp and Retreat Teel Mountain HOA

Notes:

Prepared by: GJH 06/10/21
Checked by: LCT 08/05/21

1. The population that the system directly sells water to, rounded to the nearest 100.
2. The population benefited from the system's sale to another system, rounded to the nearest 100.
3. The value in parentheses indicates the number of sources.
4. Purchases/sales are from/to other water systems.
5. This interconnection was terminated after 2019.

Table 2-2
Mapping Data Received

			Level of Mapping Data Received					
County	**Qualified Water System**	**Estimated Population Directly Served[1]**	**No Mapping Data**	**Hard Copy/PDF Maps**	**Digital Mapping Data - GIS**	**Digital Mapping Data - CAD**	**Digital Mapping Data - Google Earth**	**Hydraulic Computer Model**
Habersham	Baldwin	3,900		◊	◊			
Union	Blairsville	2,600	◊					
Fannin	Blue Ridge	7,500		◊	◊			
Gordon	Calhoun	49,000			◊			
Catoosa	Catoosa Utility District Authority	52,700			◊			
Floyd	Cave Spring	3,700		◊				
Polk	Cedartown	9,900	◊					
Murray	Chatsworth	24,400		◊	◊			
Chattooga	Chattooga County	8,800	◊					
Walker	Chickamauga	5,100		◊		◊		
Habersham	Clarkesville	5,600			◊			
White	Cleveland	4,100		◊				
Union	Coosa Water Authority	5,300		◊				
Habersham	Cornelia	6,800		◊	◊			
Dade	Dade County	18,700		◊				
Lumpkin	Dahlonega	7,000		◊			◊	
Whitfield	Dalton	92,500			◊			
Habersham	Demorest	17,200			◊			
Gilmer	Ellijay-Gilmer County	13,000	◊					
Dawson	Etowah Water & Sewer Auth.	16,200		◊	◊			
Floyd	Floyd County	41,900	◊					
Catoosa	Fort Oglethorpe	7,900		◊				
Towns	Hiawassee	5,000		◊	◊			
Pickens	Jasper	11,800	◊					
Walker	Lafayette	16,000		◊	◊			
Fannin	McCaysville	8,100	◊					
Union	Notla Water Authority	15,600	◊					
Pickens	Pickens County	7,200		◊				
Polk	Polk County	24,100		◊				
Polk	Rockmart	3,400	◊					
Floyd	Rome	48,100		◊	◊		◊	
Chattooga	Summerville	9,600		◊				
Towns	Towns County	10,900		◊				
Walker	Walker County	28,600			◊			
White	White County	4,400	◊					

Notes:

1. The population that the system directly sells water to, rounded to the nearest 100.

Prepared by: GJH 06/14/21
Checked by: LCT 08/05/21

Table 2-3
Reports and Documents Received

			Reports and Documents Received[3]								
County	**Qualified Water System**	**Estimated Population Directly Served[1]**	**Comprehensive / Capital Improvement Plan[2]**	**Permits**	**Sanitary Survey[4]**	**Water Sale / Purchase Agreements**	**Water Conservation Plan**	**Consumption / Withdrawal Reports**	**Insurance Services Office Report**	**2015 Water Loss Audit[4]**	**Emergency Response Plan**
Habersham	Baldwin	3,900	◊	◊	◊					◊	
Union	Blairsville	2,600	◊	◊	◊			◊		◊	
Fannin	Blue Ridge	7,500	◊	◊	◊			◊		◊	◊
Gordon	Calhoun	49,000	◊	◊	◊	◊				◊	◊
Catoosa	Catoosa Utility District Authority	52,700	◊	◊	◊	◊		◊		◊	
Floyd	Cave Spring	3,700	◊	◊	◊		◊	◊		◊	◊
Polk	Cedartown	9,900	◊	◊	◊					◊	◊
Murray	Chatsworth	24,400	◊	◊	◊					◊	◊
Chattooga	Chattooga County	8,800	◊	◊	◊					◊	◊
Walker	Chickamauga	5,100	◊	◊	◊					◊	
Habersham	Clarkesville	5,600	◊	◊	◊	◊				◊	
White	Cleveland	4,100	◊	◊	◊					◊	◊
Union	Coosa Water Authority	5,300	◊	◊	◊					◊	
Habersham	Cornelia	6,800	◊	◊	◊	◊				◊	
Dade	Dade County	18,700	◊	◊	◊		◊			◊	◊
Lumpkin	Dahlonega	7,000	◊	◊	◊					◊	◊
Whitfield	Dalton	92,500	◊	◊	◊	◊	◊	◊		◊	◊
Habersham	Demorest	17,200	◊	◊	◊					◊	
Gilmer	Ellijay-Gilmer County	13,000	◊	◊	◊					◊	
Dawson	Etowah Water & Sewer Auth.	16,200	◊	◊	◊	◊	◊	◊		◊	◊
Floyd	Floyd County	41,900	◊	◊	◊	◊	◊			◊	
Catoosa	Fort Oglethorpe	7,900	◊		◊					◊	
Towns	Hiawassee	5,000	◊	◊	◊	◊				◊	◊
Pickens	Jasper	11,800	◊	◊	◊					◊	
Walker	Lafayette	16,000	◊	◊	◊					◊	◊
Fannin	McCaysville	8,100	◊	◊	◊					◊	
Union	Notla Water Authority	15,600	◊	◊	◊					◊	
Pickens	Pickens County	7,200	◊		◊					◊	
Polk	Polk County	24,100	◊	◊	◊	◊	◊		◊	◊	◊
Polk	Rockmart	3,400	◊	◊	◊					◊	◊
Floyd	Rome	48,100	◊	◊	◊	◊	◊			◊	◊
Chattooga	Summerville	9,600	◊	◊	◊					◊	

Table 2-3

Reports and Documents Received

			Reports and Documents Received[3]								
County	**Qualified Water System**	**Estimated Population Directly Served[1]**	**Comprehensive / Capital Improvement Plan[2]**	**Permits**	**Sanitary Survey[4]**	**Water Sale / Purchase Agreements**	**Water Conservation Plan**	**Consumption / Withdrawal Reports**	**Insurance Services Office Report**	**2015 Water Loss Audit[4]**	**Emergency Response Plan**
Towns	Towns County	10,900	◊	◊	◊		◊			◊	◊
Walker	Walker County	28,600	◊	◊	◊	◊	◊	◊		◊	◊
White	White County	4,400	◊	◊	◊					◊	◊

Notes:

Prepared by: GJH 06/14/21

Checked by: LCT 08/05/21

1. The population that the system directly sells water to, rounded to the nearest 100.
2. The Georgia Department of Community Affairs website contained comprehensive plans.
3. Some systems provided additional, potentially relevant documents.
4. EPD supplied recent sanitary surveys and 2015 water audits for many systems.

Table 3-1
Current and Future Excess Capacity

County	Qualified Water System (QWS)	Raw Water Source(s)[1]	2015 Peak Day Design Capacity (MGD)	2015 ADD (MGD) (Water Withdrawal Only)[2]	2015 Excess Capacity (MGD)	Current Peak Permitted Withdrawal (MGD)[3]	2050 Peak Day Design Capacity (MGD)[4]	2050 ADD (MGD) (Water Withdrawal Only)[5]	2050 Excess Capacity (MGD)
Habersham	Baldwin	Surface Water (1)	4.0	1.9	2.1	4.0	4.0	4.5	-0.5
Union	Blairsville	Surface Water (1) Groundwater Wells (4)	1.8	0.5	1.2	1.63[(6)]	1.8	0.4	1.2
Fannin	Blue Ridge	Surface Water (1)	1.5	0.8	0.7	1.5	1.5	0.9	0.6
Gordon	Calhoun	Surface Water (2) Spring (1) Groundwater Wells (2)	30.8	9.8	21.0	37.0[(7)]	30.8	12.4	18.4
Catoosa	Catoosa Utility District Authority	Spring (1)	7.0	4.3	2.7	7.0	7.0	7.2	-0.2
Floyd	Cave Spring	Spring (1)	1.5	0.8	0.7	1.5	1.5	1.1	0.4
Polk	Cedartown	Spring (1)	3.0	1.6	1.4	3.0	3.0	1.8	1.2
Murray	Chatsworth	Surface Water (1) Spring (2) Groundwater Wells (1)	4.2	1.7	2.5	9.414[(8)]	7.5	2.7	4.8
Chattooga	Chattooga County	Groundwater Wells (7)	2.7	0.8	1.9	1.205	2.7	1.2	1.5
Walker	Chickamauga	Groundwater Wells (1)	1.8	0.8	1.0	1.8	3.0	0.8	2.2
Habersham	Clarkesville	Surface Water (1)	1.5	0.5	1.0	1.5	1.5	1.5	0.002
White	Cleveland	Groundwater Wells (4)	0.6	0.5	0.2	0.841	1.1	0.6	0.5
Union	Coosa Water Authority	Groundwater Wells (4)	0.6	0.3	0.3	0.39	0.6	0.7	-0.1
Habersham	Cornelia	Surface Water (2)	4.0	2.3	1.7	4.0	4.5	2.7	1.3
Dade	Dade County	Surface Water (1) Groundwater Wells (1)	3.8	1.8	2.0	4.232[(9)]	3.8	2.1	1.7
Lumpkin	Dahlonega	Surface Water (1)	6.0	1.0	5.0	9.10	6.0	1.3	4.7
Whitfield	Dalton	Surface Water (5) Spring (1)	65.5	24.2	41.3	105.6[(10)]	65.5	40.2	25.3
Habersham	Demorest[11]	Wholesale Purchased Groundwater Wells (2)	1.8	0.1	1.6	1.203	1.8	4.1	-2.3
Gilmer	Ellijay-Gilmer County	Surface Water (2)	4.5	2.6	1.9	4.55	8.0	4.0	0.6
Dawson	Etowah Water & Sewer Auth.	Surface Water (1)	5.5	1.4	4.1	6.9	5.5	4.2	1.3
Floyd	Floyd County	Surface Water (1) Spring (1) Groundwater Wells (2)	5.7	3.4	2.2	6.1[(12)]	5.7	6.1	-0.4
Catoosa	Fort Oglethorpe	Wholesale Purchased	NA	NA	NA	NA	NA	NA	NA

Table 3-1
Current and Future Excess Capacity

County	Qualified Water System (QWS)	Raw Water Source(s)[1]	2015 Peak Day Design Capacity (MGD)	2015 ADD (MGD) (Water Withdrawal Only)[2]	2015 Excess Capacity (MGD)	Current Peak Permitted Withdrawal (MGD)[3]	2050 Peak Day Design Capacity (MGD)[4]	2050 ADD (MGD) (Water Withdrawal Only)[5]	2050 Excess Capacity (MGD)
Towns	Hiawassee	Surface Water (1)	2.0	1.2	0.8	2.72	3.0	3.3	-0.3
Pickens	Jasper	Surface Water (1) Groundwater Wells (2)	3.4	1.8	0.5	2.33[(13)]	3.4	2.4	-0.04
Walker	LaFayette	Spring (1) Groundwater Wells (1)	2.8	1.9	0.9	2.75[(14)]	4.8	2.4	0.3
Fannin	McCaysville	Surface Water (1)	1.3	0.7	0.264	1.0	1.3	0.9	0.10
Union	Notla Water Authority	Surface Water (1) Groundwater Wells (4)	2.9	0.8	2.0	2.8[(15)]	2.9	2.1	0.7
Pickens	Pickens County	Wholesale Purchased	NA	NA	NA	NA	0.3	1.3	-1.0
Polk	Polk County	Spring (4)	5.7	2.4	3.2	5.6	5.7	4.3	1.3
Polk	Rockmart	Groundwater Wells (3)	3.6	1.5	2.1	2.6	3.6	0.7	2.9
Floyd	Rome	Surface Water (2)	18.0	6.6	11.4	18.0	18.0	7.5	10.5
Chattooga	Summerville	Surface Water (1) Spring (1)	3.4	1.8	1.6	3.75[(16)]	4.5	1.5	2.3
Towns	Towns County	Wholesale Purchased	NA	NA	NA	NA	NA	NA	NA
Walker	Walker County	Surface Water (1) Groundwater Wells (8)	8.3	3.6	4.7	12.8[(17)]	15.8	5.0	7.8
White	White County	Surface Water (1)	2.0	0.6	1.4	2.0	2.0	1.6	0.4
Totals			**211.2**	**84.0**	**125.4**	**268.8**	**232.1**	**133.6**	**87.0**

Prepared by: LCT 08/27/21
Checked by: GJH 09/07/21

Notes:
ADD - average daily demand
NA - not applicable because these are purchase-only QWS
MGD - million gallons per day
1. The value in parentheses indicates the number of sources.
2. 2015 EPD-validated water loss audit values are reported. In the event a QWS is not in that dataset, as identified in Table 2-3, QWS-provided values are reported, as available.
3. Values for groundwater systems are MGD - monthly average; values for spring water and surface water systems are combined (if multiple permits) MGD - 24-hour max. Surface water permitted withdrawal values include withdrawals for immediate water treatment and for reservoir filling.
4. Chatsworth indicated two new WTPs totalling 3.3 MGD. Chickamauga indicated installing a new well (1.224 MGD). Cleveland indicated installing two wells (0.432 MGD). Cornelia plans to increase plant capacity by 0.5 MGD. Ellijay-Gilmer County indicated new WTPs totalling 3.5 MGD. Hiawassee indicated expanding the plant by 1 MGD. LaFayette indicated adding two 1 MGD WTPs. Pickens County indicated a new 0.33 MGD plant. Summerville indicated a new 1.14 MGD well. Walker County indicated upgrading the surface water plant by 7.5 MGD.
5. Municipal and publicly-supplied industrial demand by county were allocated to each QWS.
6. 0.4 MGD is for groundwater; 1.23 MGD is for surface water.
7. 5.8 MGD is for groundwater; 7 MGD is for spring water; 24.2 is for surface water.
8. 1.764 is for groundwater; 1.8 MGD is for spring water; 5.85 MGD is for surface water.
9. 0.432 MGD is for groundwater; 3.8 MGD is for surface water.
10. 2.0 MGD is for spring water; 103.6 MGD is for surface water
11. Demorest receives the majority of its water supply through purchased water, but it operates two wells in a supplemental capacity.
12. 1.3 MGD is for groundwater; 4.0 MGD is for spring water; 0.8 MGD is for surface water.
13. 1.33 MGD is for groundwater; 1.0 MGD is for surface water.
14. 1.1 MGD is for groundwater; 1.65 MGD is for spring water.
15. 0.8 MGD is for groundwater; 2 MGD is for surface water.
16. 0.75 MGD for spring water; 3 MGD for surface water.
17. 8.3 MGD for groundwater; 4.5 MGD for surface water.

Table 4-1
Total Water Demands

County	Qualified Water System	2015 ADD (MGD) (Water Withdrawal Only)	2015 Regular Purchased Volume - Outside County (MGD)[1]	2015 Regular Purchased Volume - Inside County (MGD)[1]	2015 Total Demand (MGD)	2050 Total Demand (MGD)
Habersham	Baldwin	1.88	0.00	0.01	1.90	4.54
Union	Blairsville	0.47	0.00	0.00	0.47	0.41
Fannin	Blue Ridge	0.77	0.00	0.00	0.77	0.86
Gordon	Calhoun	9.75	0.00	0.00	9.75	12.40
Catoosa	Catoosa Utility District Authority	4.26	0.27	0.00	4.53	7.16
Floyd	Cave Spring	0.81	0.00	0.00	0.81	1.09
Polk	Cedartown	1.59	0.00	0.00	1.59	1.82
Murray	Chatsworth	1.71	1.23	0.00	2.94	2.66
Chattooga	Chattooga County	0.81	0.00	0.00	0.81	1.24
Walker	Chickamauga	0.78	0.00	0.00	0.78	0.80
Habersham	Clarkesville	0.54	0.00	0.00	0.54	1.50
White	Cleveland	0.46	0.00	0.12	0.59	0.58
Union	Coosa Water Authority	0.31	0.00	0.00	0.31	0.73
Habersham	Cornelia	2.34	0.00	0.00	2.34	2.75
Dade	Dade County	1.77	0.00	0.00	1.77	2.10
Lumpkin	Dahlonega	0.98	0.00	0.00	0.98	1.35
Whitfield	Dalton	24.21	0.96	0.00	25.18	40.21
Habersham	Demorest	0.14	0.13	1.86	2.13	4.15
Gilmer	Ellijay-Gilmer County	2.56	0.00	0.00	2.56	3.96
Dawson	Etowah Water & Sewer Auth.	1.39	0.01	0.00	1.40	4.21
Floyd	Floyd County	3.42	0.97	0.37	4.76	6.09
Catoosa	Fort Oglethorpe	0.00	0.92	0.00	0.92	1.01
Towns	Hiawassee	1.18	0.00	0.00	1.18	3.35
Pickens	Jasper	1.81	0.00	0.00	1.81	2.37
Walker	LaFayette	1.85	0.01	0.75	2.60	2.44
Fannin	McCaysville	0.74	0.00	0.00	0.74	0.90
Union	Notla Water Authority	0.83	0.00	0.00	0.83	2.14
Pickens	Pickens County	0.00	0.36	0.20	0.56	1.29
Polk	Polk County	2.43	0.06	0.00	2.49	4.35
Polk	Rockmart	1.49	0.00	0.00	1.49	0.74
Floyd	Rome	6.63	0.00	0.05	6.68	7.48
Chattooga	Summerville	1.78	0.00	0.00	1.78	1.46
Towns	Towns County	0.00	0.00	0.62	0.62	2.29
Walker	Walker County	3.65	0.00	0.00	3.65	5.00
White	White County	0.63	0.00	0.00	0.63	1.57
	Totals	**83.99**	**4.91**	**3.99**	**92.88**	**136.98**

Prepared by: LCT 08/27/21
Checked by: GJH 09/03/21

Notes:
ADD - average daily demand
NA - not applicable because these are purchase-only QWS
MGD - million gallons per day
1. Values were reported by QWS, and aggregate volumes were verified with the 2015 EPD-validated water loss audit, as available.

Table 4-2
Reliability Targets for Current and Future Demand

			2015 - Immediate Reliability Target			2050 - Long-Range Reliability Target		
County	**Qualified Water System**	**Public Water System Identification Number**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**
Habersham	Baldwin	GA1370001	1.90	1.23	0.66	4.54	2.95	1.59
Union	Blairsville	GA2910000	0.47	0.31	0.17	0.41	0.26	0.14
Fannin	Blue Ridge	GA1110000	0.77	0.50	0.27	0.86	0.56	0.30
Gordon	Calhoun	GA1290000	9.75	6.34	3.41	12.40	8.06	4.34
Catoosa	Catoosa Utility District Authority	GA0470000	4.53	2.95	1.59	7.16	4.65	2.51
Floyd	Cave Spring	GA1150000	0.81	0.53	0.28	1.09	0.71	0.38
Polk	Cedartown	GA2330000	1.59	1.03	0.56	1.82	1.18	0.64
Murray	Chatsworth	GA2130000	2.94	1.91	1.03	2.66	1.73	0.93
Chattooga	Chattooga County	GA0550000	0.81	0.53	0.28	1.24	0.81	0.44
Walker	Chickamauga	GA2950000	0.78	0.50	0.27	0.80	0.52	0.28
Habersham	Clarkesville	GA1370002	0.54	0.35	0.19	1.50	0.97	0.52
White	Cleveland	GA3110000	0.59	0.38	0.21	0.58	0.38	0.20
Union	Coosa Water Authority	GA2910006	0.31	0.20	0.11	0.73	0.47	0.25
Habersham	Cornelia	GA1370003	2.34	1.52	0.82	2.75	1.79	0.96
Dade	Dade County	GA0830000	1.77	1.15	0.62	2.10	1.36	0.73
Lumpkin	Dahlonega	GA1870000	0.98	0.64	0.34	1.35	0.88	0.47
Whitfield	Dalton	GA3130000	25.18	16.36	8.81	40.21	26.14	14.07
Habersham	Demorest	GA1370004	2.13	1.39	0.75	4.15	2.69	1.45
Gilmer	Ellijay-Gilmer County	GA1230000	2.56	1.66	0.89	3.96	2.58	1.39
Dawson	Etowah Water & Sewer Auth.	GA0850007	1.40	0.91	0.49	4.21	2.74	1.47
Floyd	Floyd County	GA1150001	4.76	3.10	1.67	6.09	3.96	2.13
Catoosa	Fort Oglethorpe	GA0470001	0.92	0.60	0.32	1.01	0.65	0.35
Towns	Hiawassee	GA2810000	1.18	0.77	0.41	3.35	2.18	1.17
Pickens	Jasper	GA2270000	1.81	1.18	0.63	2.37	1.54	0.83
Walker	LaFayette	GA2950002	2.60	1.69	0.91	2.44	1.59	0.85
Fannin	McCaysville	GA1110001	0.74	0.48	0.26	0.90	0.59	0.32
Union	Notla Water Authority	GA2910003	0.83	0.54	0.29	2.14	1.39	0.75
Pickens	Pickens County	GA2270002	0.56	0.37	0.20	1.29	0.84	0.45
Polk	Polk County	GA2330001	2.49	1.62	0.87	4.35	2.83	1.52
Polk	Rockmart	GA2330002	1.49	0.97	0.52	0.74	0.48	0.26
Floyd	Rome	GA1150002	6.68	4.34	2.34	7.48	4.86	2.62
Chattooga	Summerville	GA0550003	1.78	1.15	0.62	1.46	0.95	0.51
Towns	Towns County	GA2810007	0.62	0.40	0.22	2.29	1.49	0.80
Walker	Walker County	GA2950003	3.65	2.37	1.28	5.00	3.25	1.75
White	White County	GA3110072	0.63	0.41	0.22	1.57	1.02	0.55
Totals			**92.9**	**60.4**	**32.5**	**137.0**	**89.0**	**47.9**

Prepared by: LCT 08/27/21
Checked by: GJH 09/03/21

Notes:
ADD - average daily demand
MGD - million gallons per day
1. Total demand (withdrawal plus purchases) is defined the same as 100% annual average day demand.

Table 5-1
Water Supply Risks and Emergency Scenarios

Water Supply Risk	Emergency Scenario	Type	Duration (Days)	Evaluation Selection Criteria	Key Assumptions
A. Failure of largest water treatment plant (WTP)	A1. Power supply failure of largest WTP	Short-term Defined Duration	1	QWS that receive water from a system-owned WTP	- Treatment capacity is based on the backup generator's capacity, if available. Otherwise, 80% of peak treatment is assumed. - In the event a QWS has a portable generator, it is assumed that generator is used at the largest WTP, per this scenario - 60% of QWS treated water storage is available at the beginning of the emergency.
	A2. Critical asset failure at largest WTP (e.g., loss of clearwell, loss of chemical treatment)	Short-term Defined Duration	30		- The longer duration excludes the availability of water storage supply. - Each WTP was evaluated for unit process redundancy and the ability to operate at a higher rate. - Critical assets for groundwater QWS include chemical treatment. Backup chemical feed equipment is required for WTPs installed after 1/1/1998.
B. Short-term catastrophic failure of a water distribution system	Critical transmission main failure from largest WTP or interconnection	Short-term Defined Duration	1	QWS with a distribution system	- 60% of QWS treated water storage is available at the beginning of the emergency.
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers a boil water notice	Short-term Defined Duration	3	QWS with a distribution system	- No capacity is lost - Water is non-potable
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Short-term Defined Duration	1	QWS that pump from a raw water source	- In the case of groundwater QWS, the aquifer supplying the largest WTP is assumed to be locally contaminated. - 60% of QWS treated water storage is available at the beginning of the emergency. - 60% of QWS raw water storage and clearwell storage is available at the beginning of the emergency.
	D2. Chemical contamination of largest raw water source	Short-term Defined Duration	1		- In the case of groundwater QWS, the aquifer supplying the largest WTP is assumed to be locally contaminated. - 60% of QWS treated water storage is available at the beginning of the emergency. - 60% of QWS raw water storage and clearwell storage is available at the beginning of the emergency.
E. Full unavailability of major raw water sources due to federal or state government actions	--	Long-term Undefined Duration	>365	QWS that use Lake Lanier/Chattahoochee River or Allatoona Lake/Etowah River as a raw water source	- Not currently applicable
F. Limited or reduced availability of major raw water sources due to federal or state government actions	--	Long-term Undefined Duration	>365	QWS that use Lake Lanier/Chattahoochee River or Allatoona Lake/Etowah River as a raw water source	- Not currently applicable

Table 5-1
Water Supply Risks and Emergency Scenarios

Water Supply Risk	Emergency Scenario	Type	Duration (Days)	Evaluation Selection Criteria	Key Assumptions
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Short-term Defined Duration	30	QWS that have a raw water supply from a dammed reservoir (not including Lake Lanier or Lake Allatoona)	- The longer duration excludes the availability of water storage supply.
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Short-term Defined Duration	120	QWS with reservoirs in small watersheds and no direct withdrawal from a major river	- Available raw water supply for each QWS is 40% of ADD due to drought.

Prepared by: GJH 11/10/20
Checked by: LCT 11/19/20

Notes:
ADD - average daily demand
QWS - qualified water system
WTP - water treatment plant

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Habersham	Baldwin	A1	5.0	1.9	1.2	0.7	0.0	0.0	0.0	5.3	4.5	3.0	1.6	0.0	0.0	0.0
		A2	4.6	1.9	1.2	0.7	0.0	0.0	0.0	4.6	4.5	3.0	1.6	0.0	0.0	0.0
		B	**1.0**	**1.9**	**1.2**	**0.7**	**0.9**	**0.2**	0.0	2.4	4.5	3.0	1.6	2.1	0.5	0.0
		C	4.6	1.9	1.2	0.7	0.0	0.0	0.0	4.6	4.5	3.0	1.6	0.0	0.0	0.0
		D1	1.6	1.9	1.2	0.7	0.3	0.0	0.0	**1.9**	**4.5**	**3.0**	**1.6**	**2.6**	**1.1**	0.0
		D2	1.6	1.9	1.2	0.7	0.3	0.0	0.0	1.9	4.5	3.0	1.6	2.6	1.1	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	1.4	1.9	1.2	0.7	0.5	0.0	0.0	2.5	4.5	3.0	1.6	2.1	0.5	0.0
Union	Blairsville	A1	2.9	0.5	0.3	0.2	0.0	0.0	0.0	2.9	0.4	0.3	0.1	0.0	0.0	0.0
		A2	2.4	0.5	0.3	0.2	0.0	0.0	0.0	2.4	0.4	0.3	0.1	0.0	0.0	0.0
		B	1.9	0.5	0.3	0.2	0.0	0.0	0.0	1.9	0.4	0.3	0.1	0.0	0.0	0.0
		C	2.4	0.5	0.3	0.2	0.0	0.0	0.0	2.4	0.4	0.3	0.1	0.0	0.0	0.0
		D1	1.9	0.5	0.3	0.2	0.0	0.0	0.0	1.9	0.4	0.3	0.1	0.0	0.0	0.0
		D2	1.9	0.5	0.3	0.2	0.0	0.0	0.0	1.9	0.4	0.3	0.1	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	0.8	0.5	0.3	0.2	0.0	0.0	0.0	0.8	0.4	0.3	0.1	0.0	0.0	0.0
Fannin	Blue Ridge	A1	3.3	0.8	0.5	0.3	0.0	0.0	0.0	3.1	0.9	0.6	0.3	0.0	0.0	0.0
		A2	1.8	0.8	0.5	0.3	0.0	0.0	0.0	1.6	0.9	0.6	0.3	0.0	0.0	0.0
		B	1.8	0.8	0.5	0.3	0.0	0.0	0.0	1.6	0.9	0.6	0.3	0.0	0.0	0.0
		C	1.8	0.8	0.5	0.3	0.0	0.0	0.0	1.6	0.9	0.6	0.3	0.0	0.0	0.0
		D1	3.3	0.8	0.5	0.3	0.0	0.0	0.0	3.1	0.9	0.6	0.3	0.0	0.0	0.0
		D2	3.3	0.8	0.5	0.3	0.0	0.0	0.0	3.1	0.9	0.6	0.3	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	**0.3**	**0.8**	**0.5**	**0.3**	**0.5**	**0.2**	0.0	**0.3**	**0.9**	**0.6**	**0.3**	**0.5**	**0.2**	0.0

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Gordon	Calhoun	A1	49.0	9.8	6.3	3.4	0.0	0.0	0.0	50.0	12.4	8.1	4.3	0.0	0.0	0.0
		A2	33.0	9.8	6.3	3.4	0.0	0.0	0.0	32.9	12.4	8.1	4.3	0.0	0.0	0.0
		B	30.0	9.8	6.3	3.4	0.0	0.0	0.0	31.0	12.4	8.1	4.3	0.0	0.0	0.0
		C	33.0	9.8	6.3	3.4	0.0	0.0	0.0	32.9	12.4	8.1	4.3	0.0	0.0	0.0
		D1	37.8	9.8	6.3	3.4	0.0	0.0	0.0	38.9	12.4	8.1	4.3	0.0	0.0	0.0
		D2	37.8	9.8	6.3	3.4	0.0	0.0	0.0	38.9	12.4	8.1	4.3	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Catoosa	Catoosa Utility District Authority	A1	29.1	4.5	2.9	1.6	0.0	0.0	0.0	29.1	7.2	4.7	2.5	0.0	0.0	0.0
		A2	15.5	4.5	2.9	1.6	0.0	0.0	0.0	15.5	7.2	4.7	2.5	0.0	0.0	0.0
		B	22.1	4.5	2.9	1.6	0.0	0.0	0.0	22.1	7.2	4.7	2.5	0.0	0.0	0.0
		C	15.5	4.5	2.9	1.6	0.0	0.0	0.0	15.5	7.2	4.7	2.5	0.0	0.0	0.0
		D1	22.1	4.5	2.9	1.6	0.0	0.0	0.0	22.1	7.2	4.7	2.5	0.0	0.0	0.0
		D2	22.1	4.5	2.9	1.6	0.0	0.0	0.0	22.1	7.2	4.7	2.5	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Floyd	Cave Spring	A1	4.6	0.8	0.5	0.3	0.0	0.0	0.0	2.4	1.1	0.7	0.4	0.0	0.0	0.0
		A2	4.9	0.8	0.5	0.3	0.0	0.0	0.0	2.6	1.1	0.7	0.4	0.0	0.0	0.0
		B	4.6	0.8	0.5	0.3	0.0	0.0	0.0	2.4	1.1	0.7	0.4	0.0	0.0	0.0
		C	4.9	0.8	0.5	0.3	0.0	0.0	0.0	2.6	1.1	0.7	0.4	0.0	0.0	0.0
		D1	4.6	0.8	0.5	0.3	0.0	0.0	0.0	2.4	1.1	0.7	0.4	0.0	0.0	0.0
		D2	4.6	0.8	0.5	0.3	0.0	0.0	0.0	2.4	1.1	0.7	0.4	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Polk	Cedartown	A1	3.3	1.6	1.0	0.6	0.0	0.0	0.0	3.3	1.8	1.2	0.6	0.0	0.0	0.0
		A2	4.1	1.6	1.0	0.6	0.0	0.0	0.0	4.1	1.8	1.2	0.6	0.0	0.0	0.0
		B	3.3	1.6	1.0	0.6	0.0	0.0	0.0	3.3	1.8	1.2	0.6	0.0	0.0	0.0
		C	4.1	1.6	1.0	0.6	0.0	0.0	0.0	4.1	1.8	1.2	0.6	0.0	0.0	0.0
		D1	3.4	1.6	1.0	0.6	0.0	0.0	0.0	3.4	1.8	1.2	0.6	0.0	0.0	0.0
		D2	3.4	1.6	1.0	0.6	0.0	0.0	0.0	3.4	1.8	1.2	0.6	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Murray	Chatsworth	A1	14.4	2.9	1.9	1.0	0.0	0.0	0.0	20.1	2.7	1.7	0.9	0.0	0.0	0.0
		A2	9.7	2.9	1.9	1.0	0.0	0.0	0.0	13.0	2.7	1.7	0.9	0.0	0.0	0.0
		B	12.4	2.9	1.9	1.0	0.0	0.0	0.0	17.9	2.7	1.7	0.9	0.0	0.0	0.0
		C	9.7	2.9	1.9	1.0	0.0	0.0	0.0	13.0	2.7	1.7	0.9	0.0	0.0	0.0
		D1	12.6	2.9	1.9	1.0	0.0	0.0	0.0	18.1	2.7	1.7	0.9	0.0	0.0	0.0
		D2	12.6	2.9	1.9	1.0	0.0	0.0	0.0	18.1	2.7	1.7	0.9	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	7.7	2.9	1.9	1.0	0.0	0.0	0.0	11.0	2.7	1.7	0.9	0.0	0.0	0.0
		H	**2.3**	**2.9**	**1.9**	**1.0**	**0.6**	0.0	0.0	**2.2**	**2.7**	**1.7**	**0.9**	**0.4**	0.0	0.0
Chattooga	Chattooga County	A1	8.5	0.8	0.5	0.3	0.0	0.0	0.0	8.5	1.2	0.8	0.4	0.0	0.0	0.0
		A2	7.5	0.8	0.5	0.3	0.0	0.0	0.0	7.5	1.2	0.8	0.4	0.0	0.0	0.0
		B	7.6	0.8	0.5	0.3	0.0	0.0	0.0	7.6	1.2	0.8	0.4	0.0	0.0	0.0
		C	7.5	0.8	0.5	0.3	0.0	0.0	0.0	7.5	1.2	0.8	0.4	0.0	0.0	0.0
		D1	7.6	0.8	0.5	0.3	0.0	0.0	0.0	7.6	1.2	0.8	0.4	0.0	0.0	0.0
		D2	7.6	0.8	0.5	0.3	0.0	0.0	0.0	7.6	1.2	0.8	0.4	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Walker	Chickamauga	A1	1.8	0.8	0.5	0.3	0.0	0.0	0.0	3.6	0.8	0.5	0.3	0.0	0.0	0.0
		A2	3.3	0.8	0.5	0.3	0.0	0.0	0.0	4.5	0.8	0.5	0.3	0.0	0.0	0.0
		B	1.8	0.8	0.5	0.3	0.0	0.0	0.0	3.6	0.8	0.5	0.3	0.0	0.0	0.0
		C	3.3	0.8	0.5	0.3	0.0	0.0	0.0	4.5	0.8	0.5	0.3	0.0	0.0	0.0
		D1	1.8	0.8	0.5	0.3	0.0	0.0	0.0	3.6	0.8	0.5	0.3	0.0	0.0	0.0
		D2	1.8	0.8	0.5	0.3	0.0	0.0	0.0	3.6	0.8	0.5	0.3	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Habersham	Clarkesville	A1	3.1	0.5	0.4	0.2	0.0	0.0	0.0	3.1	1.5	1.0	0.5	0.0	0.0	0.0
		A2	1.0	0.5	0.4	0.2	0.0	0.0	0.0	**1.0**	**1.5**	**1.0**	**0.5**	**0.5**	0.0	0.0
		B	1.6	0.5	0.4	0.2	0.0	0.0	0.0	1.6	1.5	1.0	0.5	0.0	0.0	0.0
		C	2.5	0.5	0.4	0.2	0.0	0.0	0.0	2.5	1.5	1.0	0.5	0.0	0.0	0.0
		D1	1.7	0.5	0.4	0.2	0.0	0.0	0.0	1.7	1.5	1.0	0.5	0.0	0.0	0.0
		D2	1.7	0.5	0.4	0.2	0.0	0.0	0.0	1.7	1.5	1.0	0.5	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	1.2	0.5	0.4	0.2	0.0	0.0	0.0	1.6	1.5	1.0	0.5	0.0	0.0	0.0
White	Cleveland	A1	2.3	0.6	0.4	0.2	0.0	0.0	0.0	1.7	0.6	0.4	0.2	0.0	0.0	0.0
		A2	2.1	0.6	0.4	0.2	0.0	0.0	0.0	1.6	0.6	0.4	0.2	0.0	0.0	0.0
		B	2.3	0.6	0.4	0.2	0.0	0.0	0.0	1.7	0.6	0.4	0.2	0.0	0.0	0.0
		C	2.1	0.6	0.4	0.2	0.0	0.0	0.0	1.6	0.6	0.4	0.2	0.0	0.0	0.0
		D1	2.3	0.6	0.4	0.2	0.0	0.0	0.0	1.7	0.6	0.4	0.2	0.0	0.0	0.0
		D2	2.3	0.6	0.4	0.2	0.0	0.0	0.0	1.7	0.6	0.4	0.2	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Union	Coosa Water Authority	A1	0.7	0.3	0.2	0.1	0.0	0.0	0.0	0.7	0.7	0.5	0.3	0.06	0.0	0.0
		A2	0.6	0.3	0.2	0.1	0.0	0.0	0.0	**0.6**	**0.7**	**0.5**	**0.3**	**0.15**	0.0	0.0
		B	0.7	0.3	0.2	0.1	0.0	0.0	0.0	0.7	0.7	0.5	0.3	0.1	0.0	0.0
		C	0.6	0.3	0.2	0.1	0.0	0.0	0.0	0.6	0.7	0.5	0.3	0.1	0.0	0.0
		D1	0.7	0.3	0.2	0.1	0.0	0.0	0.0	0.7	0.7	0.5	0.3	0.1	0.0	0.0
		D2	0.7	0.3	0.2	0.1	0.0	0.0	0.0	0.7	0.7	0.5	0.3	0.1	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Habersham	Cornelia	A1	5.9	2.3	1.5	0.8	0.0	0.0	0.0	5.9	2.7	1.8	1.0	0.0	0.0	0.0
		A2	**0.0**	**2.3**	**1.5**	**0.8**	**2.3**	**1.5**	**0.8**	**0.0**	**2.7**	**1.8**	**1.0**	**2.7**	**1.8**	**1.0**
		B	1.9	2.3	1.5	0.8	0.5	0.0	0.0	1.9	2.7	1.8	1.0	0.9	0.0	0.0
		C	4.0	2.3	1.5	0.8	0.0	0.0	0.0	4.0	2.7	1.8	1.0	0.0	0.0	0.0
		D1	7.1	2.3	1.5	0.8	0.0	0.0	0.0	7.1	2.7	1.8	1.0	0.0	0.0	0.0
		D2	7.1	2.3	1.5	0.8	0.0	0.0	0.0	7.1	2.7	1.8	1.0	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	4.0	2.3	1.5	0.8	0.0	0.0	0.0	4.0	2.7	1.8	1.0	0.0	0.0	0.0
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dade	Dade County	A1	2.1	1.8	1.2	0.6	0.0	0.0	0.0	3.0	2.1	1.4	0.7	0.0	0.0	0.0
		A2	4.1	1.8	1.2	0.6	0.0	0.0	0.0	4.1	2.1	1.4	0.7	0.0	0.0	0.0
		B	2.1	1.8	1.2	0.6	0.0	0.0	0.0	3.0	2.1	1.4	0.7	0.0	0.0	0.0
		C	4.1	1.8	1.2	0.6	0.0	0.0	0.0	4.1	2.1	1.4	0.7	0.0	0.0	0.0
		D1	2.8	1.8	1.2	0.6	0.0	0.0	0.0	3.7	2.1	1.4	0.7	0.0	0.0	0.0
		D2	2.8	1.8	1.2	0.6	0.0	0.0	0.0	3.7	2.1	1.4	0.7	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	**1.4**	**1.8**	**1.2**	**0.6**	**0.3**	0.0	0.0	**1.6**	**2.1**	**1.4**	**0.7**	**0.5**	0.0	0.0

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Lumpkin	Dahlonega	A1	6.7	1.0	0.6	0.3	0.0	0.0	0.0	6.7	1.3	0.9	0.5	0.0	0.0	0.0
		A2	**0.0**	**1.0**	**0.6**	**0.3**	**1.0**	**0.6**	**0.3**	**0.0**	**1.3**	**0.9**	**0.5**	**1.3**	**0.9**	**0.5**
		B	0.7	1.0	0.6	0.3	0.3	0.0	0.0	0.7	1.3	0.9	0.5	0.7	0.2	0.0
		C	6.0	1.0	0.6	0.3	0.0	0.0	0.0	6.0	1.3	0.9	0.5	0.0	0.0	0.0
		D1	1.3	1.0	0.6	0.3	0.0	0.0	0.0	1.3	1.3	0.9	0.5	0.1	0.0	0.0
		D2	1.3	1.0	0.6	0.3	0.0	0.0	0.0	1.3	1.3	0.9	0.5	0.1	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	0.0	1.0	0.6	0.3	1.0	0.6	0.3	0.0	1.3	0.9	0.5	1.3	0.9	0.5
		H	0.4	1.0	0.6	0.3	0.6	0.2	0.0	0.5	1.3	0.9	0.5	0.8	0.3	0.0
Whitfield	Dalton	A1	101.6	25.2	16.4	8.8	0.0	0.0	0.0	100.5	40.2	26.1	14.1	0.0	0.0	0.0
		A2	68.9	25.2	16.4	8.8	0.0	0.0	0.0	67.8	40.2	26.1	14.1	0.0	0.0	0.0
		B	51.3	25.2	16.4	8.8	0.0	0.0	0.0	50.2	40.2	26.1	14.1	0.0	0.0	0.0
		C	68.9	25.2	16.4	8.8	0.0	0.0	0.0	67.8	40.2	26.1	14.1	0.0	0.0	0.0
		D1	112.0	25.2	16.4	8.8	0.0	0.0	0.0	110.9	40.2	26.1	14.1	0.0	0.0	0.0
		D2	112.0	25.2	16.4	8.8	0.0	0.0	0.0	110.9	40.2	26.1	14.1	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Habersham	Demorest	A1	8.2	2.1	1.4	0.7	0.0	0.0	0.0	5.5	4.1	2.7	1.5	0.0	0.0	0.0
		A2	6.9	2.1	1.4	0.7	0.0	0.0	0.0	4.2	4.1	2.7	1.5	0.0	0.0	0.0
		B	6.8	2.1	1.4	0.7	0.0	0.0	0.0	**4.1**	**4.1**	**2.7**	**1.5**	**0.1**	0.0	0.0
		C	6.9	2.1	1.4	0.7	0.0	0.0	0.0	4.2	4.1	2.7	1.5	0.0	0.0	0.0
		D1	6.8	2.1	1.4	0.7	0.0	0.0	0.0	4.1	4.1	2.7	1.5	0.1	0.0	0.0
		D2	6.8	2.1	1.4	0.7	0.0	0.0	0.0	4.1	4.1	2.7	1.5	0.1	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Gilmer	Ellijay-Gilmer County	A1	8.2	2.6	1.7	0.9	0.0	0.0	0.0	11.7	4.0	2.6	1.4	0.0	0.0	0.0
		A2	5.6	2.6	1.7	0.9	0.0	0.0	0.0	9.1	4.0	2.6	1.4	0.0	0.0	0.0
		B	3.8	2.6	1.7	0.9	0.0	0.0	0.0	7.3	4.0	2.6	1.4	0.0	0.0	0.0
		C	5.6	2.6	1.7	0.9	0.0	0.0	0.0	9.1	4.0	2.6	1.4	0.0	0.0	0.0
		D1	7.4	2.6	1.7	0.9	0.0	0.0	0.0	10.9	4.0	2.6	1.4	0.0	0.0	0.0
		D2	7.4	2.6	1.7	0.9	0.0	0.0	0.0	10.9	4.0	2.6	1.4	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	**2.2**	**2.6**	**1.7**	**0.9**	**0.4**	0.0	0.0	**2.7**	**4.0**	**2.6**	**1.4**	**1.2**	0.0	0.0
Dawson	Etowah Water & Sewer Auth.	A1	12.3	1.4	0.9	0.5	0.0	0.0	0.0	12.3	4.2	2.7	1.5	0.0	0.0	0.0
		A2	11.1	1.4	0.9	0.5	0.0	0.0	0.0	11.1	4.2	2.7	1.5	0.0	0.0	0.0
		B	6.8	1.4	0.9	0.5	0.0	0.0	0.0	6.8	4.2	2.7	1.5	0.0	0.0	0.0
		C	11.1	1.4	0.9	0.5	0.0	0.0	0.0	11.1	4.2	2.7	1.5	0.0	0.0	0.0
		D1	7.0	1.4	0.9	0.5	0.0	0.0	0.0	12.5	4.2	2.7	1.5	0.0	0.0	0.0
		D2	7.0	1.4	0.9	0.5	0.0	0.0	0.0	12.5	4.2	2.7	1.5	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	11.1	4.2	2.7	1.5	0.0	0.0	0.0
		H	6.2	1.4	0.9	0.5	0.0	0.0	0.0	NA	NA	NA	NA	NA	NA	NA
Floyd	Floyd County	A1	21.2	4.8	3.1	1.7	0.0	0.0	0.0	21.1	6.1	4.0	2.1	0.0	0.0	0.0
		A2	14.7	4.8	3.1	1.7	0.0	0.0	0.0	14.5	6.1	4.0	2.1	0.0	0.0	0.0
		B	21.2	4.8	3.1	1.7	0.0	0.0	0.0	21.1	6.1	4.0	2.1	0.0	0.0	0.0
		C	14.7	4.8	3.1	1.7	0.0	0.0	0.0	14.5	6.1	4.0	2.1	0.0	0.0	0.0
		D1	21.2	4.8	3.1	1.7	0.0	0.0	0.0	21.1	6.1	4.0	2.1	0.0	0.0	0.0
		D2	21.2	4.8	3.1	1.7	0.0	0.0	0.0	21.1	6.1	4.0	2.1	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	11.8	4.8	3.1	1.7	0.0	0.0	0.0	12.2	6.1	4.0	2.1	0.0	0.0	0.0

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Catoosa	Fort Olgethorpe	A1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		A2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		B	5.7	0.9	0.6	0.3	0.0	0.0	0.0	3.5	1.0	0.7	0.4	0.0	0.0	0.0
		C	7.1	0.9	0.6	0.3	0.0	0.0	0.0	4.8	1.0	0.7	0.4	0.0	0.0	0.0
		D1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		D2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Towns	Hiawassee	A1	2.9	1.2	0.8	0.4	0.0	0.0	0.0	3.7	3.3	2.2	1.2	0.0	0.0	0.0
		A2	2.0	1.2	0.8	0.4	0.0	0.0	0.0	2.7	3.3	2.2	1.2	0.6	0.0	0.0
		B	0.9	1.2	0.8	0.4	0.3	0.0	0.0	1.0	3.3	2.2	1.2	2.4	1.2	0.2
		C	2.0	1.2	0.8	0.4	0.0	0.0	0.0	2.7	3.3	2.2	1.2	0.6	0.0	0.0
		D1	1.2	1.2	0.8	0.4	0.0	0.0	0.0	1.3	3.3	2.2	1.2	2.1	0.9	0.0
		D2	1.2	1.2	0.8	0.4	0.0	0.0	0.0	1.3	3.3	2.2	1.2	2.1	0.9	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	**0.0**	**1.2**	**0.8**	**0.4**	**1.2**	**0.8**	**0.4**	**0.0**	**3.3**	**2.2**	**1.2**	**3.3**	**2.2**	**1.2**
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pickens	Jasper	A1	7.5	1.8	1.2	0.6	0.0	0.0	0.0	7.5	2.4	1.5	0.8	0.0	0.0	0.0
		A2	6.5	1.8	1.2	0.6	0.0	0.0	0.0	6.5	2.4	1.5	0.8	0.0	0.0	0.0
		B	5.6	1.8	1.2	0.6	0.0	0.0	0.0	5.6	2.4	1.5	0.8	0.0	0.0	0.0
		C	6.5	1.8	1.2	0.6	0.0	0.0	0.0	6.5	2.4	1.5	0.8	0.0	0.0	0.0
		D1	7.5	1.8	1.2	0.6	0.0	0.0	0.0	7.5	2.4	1.5	0.8	0.0	0.0	0.0
		D2	7.5	1.8	1.2	0.6	0.0	0.0	0.0	7.5	2.4	1.5	0.8	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	6.2	1.8	1.2	0.6	0.0	0.0	0.0	6.4	2.4	1.5	0.8	0.0	0.0	0.0

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Walker	LaFayette	A1	11.1	2.6	1.7	0.9	0.0	0.0	0.0	12.2	2.4	1.6	0.9	0.0	0.0	0.0
		A2	5.6	2.6	1.7	0.9	0.0	0.0	0.0	6.7	2.4	1.6	0.9	0.0	0.0	0.0
		B	11.1	2.6	1.7	0.9	0.0	0.0	0.0	12.2	2.4	1.6	0.9	0.0	0.0	0.0
		C	5.6	2.6	1.7	0.9	0.0	0.0	0.0	6.7	2.4	1.6	0.9	0.0	0.0	0.0
		D1	11.1	2.6	1.7	0.9	0.0	0.0	0.0	12.2	2.4	1.6	0.9	0.0	0.0	0.0
		D2	11.1	2.6	1.7	0.9	0.0	0.0	0.0	12.2	2.4	1.6	0.9	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fannin	McCaysville	A1	1.7	0.7	0.5	0.3	0.0	0.0	0.0	1.7	0.9	0.6	0.3	0.0	0.0	0.0
		A2	1.6	0.7	0.5	0.3	0.0	0.0	0.0	1.6	0.9	0.6	0.3	0.0	0.0	0.0
		B	1.7	0.7	0.5	0.3	0.0	0.0	0.0	1.7	0.9	0.6	0.3	0.0	0.0	0.0
		C	1.6	0.7	0.5	0.3	0.0	0.0	0.0	1.6	0.9	0.6	0.3	0.0	0.0	0.0
		D1	2.0	0.7	0.5	0.3	0.0	0.0	0.0	2.0	0.9	0.6	0.3	0.0	0.0	0.0
		D2	2.0	0.7	0.5	0.3	0.0	0.0	0.0	2.0	0.9	0.6	0.3	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	**0.3**	**0.7**	**0.5**	**0.3**	**0.4**	**0.2**	0.0	**0.4**	**0.9**	**0.6**	**0.3**	**0.5**	**0.2**	0.0
Union	Notla Water Authority	A1	3.4	0.8	0.5	0.3	0.0	0.0	0.0	3.4	2.1	1.4	0.7	0.0	0.0	0.0
		A2	3.5	0.8	0.5	0.3	0.0	0.0	0.0	3.5	2.1	1.4	0.7	0.0	0.0	0.0
		B	3.4	0.8	0.5	0.3	0.0	0.0	0.0	3.4	2.1	1.4	0.7	0.0	0.0	0.0
		C	3.5	0.8	0.5	0.3	0.0	0.0	0.0	3.5	2.1	1.4	0.7	0.0	0.0	0.0
		D1	3.8	0.8	0.5	0.3	0.0	0.0	0.0	3.8	2.1	1.4	0.7	0.0	0.0	0.0
		D2	3.8	0.8	0.5	0.3	0.0	0.0	0.0	3.8	2.1	1.4	0.7	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	1.5	0.8	0.5	0.3	0.0	0.0	0.0	**1.5**	**2.1**	**1.4**	**0.7**	**0.6**	0.0	0.0
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Pickens	Pickens County	A1	NA	NA	NA	NA	NA	NA	NA	9.4	1.3	0.8	0.5	0.0	0.0	0.0
		A2	NA	NA	NA	NA	NA	NA	NA	6.6	1.3	0.8	0.5	0.0	0.0	0.0
		B	8.2	0.6	0.4	0.2	0.0	0.0	0.0	8.6	1.3	0.8	0.5	0.0	0.0	0.0
		C	7.6	0.6	0.4	0.2	0.0	0.0	0.0	6.9	1.3	0.8	0.5	0.0	0.0	0.0
		D1	NA	NA	NA	NA	NA	NA	NA	9.4	1.3	0.8	0.5	0.0	0.0	0.0
		D2	NA	NA	NA	NA	NA	NA	NA	9.4	1.3	0.8	0.5	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polk	Polk County	A1	9.5	2.5	1.6	0.9	0.0	0.0	0.0	9.5	4.3	2.8	1.5	0.0	0.0	0.0
		A2	7.0	2.5	1.6	0.9	0.0	0.0	0.0	7.0	4.3	2.8	1.5	0.0	0.0	0.0
		B	5.5	2.5	1.6	0.9	0.0	0.0	0.0	5.5	4.3	2.8	1.5	0.0	0.0	0.0
		C	7.0	2.5	1.6	0.9	0.0	0.0	0.0	7.0	4.3	2.8	1.5	0.0	0.0	0.0
		D1	6.4	2.5	1.6	0.9	0.0	0.0	0.0	6.4	4.3	2.8	1.5	0.0	0.0	0.0
		D2	6.4	2.5	1.6	0.9	0.0	0.0	0.0	6.4	4.3	2.8	1.5	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polk	Rockmart	A1	6.5	1.5	1.0	0.5	0.0	0.0	0.0	6.5	0.7	0.5	0.3	0.0	0.0	0.0
		A2	4.7	1.5	1.0	0.5	0.0	0.0	0.0	4.7	0.7	0.5	0.3	0.0	0.0	0.0
		B	2.9	1.5	1.0	0.5	0.0	0.0	0.0	2.9	0.7	0.5	0.3	0.0	0.0	0.0
		C	4.7	1.5	1.0	0.5	0.0	0.0	0.0	4.7	0.7	0.5	0.3	0.0	0.0	0.0
		D1	4.5	1.5	1.0	0.5	0.0	0.0	0.0	4.5	0.7	0.5	0.3	0.0	0.0	0.0
		D2	4.5	1.5	1.0	0.5	0.0	0.0	0.0	4.5	0.7	0.5	0.3	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Floyd	Rome	A1	26.5	6.7	4.3	2.3	0.0	0.0	0.0	25.4	7.5	4.9	2.6	0.0	0.0	0.0
		A2	20.3	6.7	4.3	2.3	0.0	0.0	0.0	18.0	7.5	4.9	2.6	0.0	0.0	0.0
		B	8.5	6.7	4.3	2.3	0.0	0.0	0.0	7.4	7.5	4.9	2.6	0.0	0.0	0.0
		C	20.3	6.7	4.3	2.3	0.0	0.0	0.0	18.0	7.5	4.9	2.6	0.0	0.0	0.0
		D1	20.9	6.7	4.3	2.3	0.0	0.0	0.0	25.9	7.5	4.9	2.6	0.0	0.0	0.0
		D2	20.9	6.7	4.3	2.3	0.0	0.0	0.0	25.9	7.5	4.9	2.6	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chattooga	Summerville	A1	7.4	1.8	1.2	0.6	0.0	0.0	0.0	8.5	1.5	0.9	0.5	0.0	0.0	0.0
		A2	5.4	1.8	1.2	0.6	0.0	0.0	0.0	6.6	1.5	0.9	0.5	0.0	0.0	0.0
		B	4.4	1.8	1.2	0.6	0.0	0.0	0.0	5.5	1.5	0.9	0.5	0.0	0.0	0.0
		C	5.4	1.8	1.2	0.6	0.0	0.0	0.0	6.6	1.5	0.9	0.5	0.0	0.0	0.0
		D1	4.5	1.8	1.2	0.6	0.0	0.0	0.0	5.7	1.5	0.9	0.5	0.0	0.0	0.0
		D2	4.5	1.8	1.2	0.6	0.0	0.0	0.0	5.7	1.5	0.9	0.5	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	2.8	1.8	1.2	0.6	0.0	0.0	0.0	3.8	1.5	0.9	0.5	0.0	0.0	0.0
Towns	Towns County	A1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		A2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		B	2.2	0.6	0.4	0.2	0.0	0.0	0.0	1.5	2.3	1.5	0.8	0.8	0.0	0.0
		C	1.8	0.6	0.4	0.2	0.0	0.0	0.0	**0.9**	**2.3**	**1.5**	**0.8**	**1.4**	**0.6**	0.0
		D1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		D2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5-2
Deficit Summary

				2015 - Immediate Reliability Target			2015 - Deficits				2050 - Long-Range Reliability Target			2050 - Deficits		
County	**Qualified Water System**	**Scenario**	**2015 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**	**2050 Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
Walker	Walker County	A1	9.2	3.6	2.4	1.3	0.0	0.0	0.0	18.0	5.0	3.2	1.7	0.0	0.0	0.0
		A2	9.3	3.6	2.4	1.3	0.0	0.0	0.0	13.6	5.0	3.2	1.7	0.0	0.0	0.0
		B	9.2	3.6	2.4	1.3	0.0	0.0	0.0	9.7	5.0	3.2	1.7	0.0	0.0	0.0
		C	9.3	3.6	2.4	1.3	0.0	0.0	0.0	13.6	5.0	3.2	1.7	0.0	0.0	0.0
		D1	16.1	3.6	2.4	1.3	0.0	0.0	0.0	18.0	5.0	3.2	1.7	0.0	0.0	0.0
		D2	16.1	3.6	2.4	1.3	0.0	0.0	0.0	18.0	5.0	3.2	1.7	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	9.3	3.6	2.4	1.3	0.0	0.0	0.0	11.2	5.0	3.2	1.7	0.0	0.0	0.0
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
White	White County	A1	3.3	0.6	0.4	0.2	0.0	0.0	0.0	3.6	1.6	1.0	0.5	0.0	0.0	0.0
		A2	2.8	0.6	0.4	0.2	0.0	0.0	0.0	3.1	1.6	1.0	0.5	0.0	0.0	0.0
		B	1.3	0.6	0.4	0.2	0.0	0.0	0.0	1.6	1.6	1.0	0.5	0.0	0.0	0.0
		C	2.8	0.6	0.4	0.2	0.0	0.0	0.0	3.1	1.6	1.0	0.5	0.0	0.0	0.0
		D1	4.1	0.6	0.4	0.2	0.0	0.0	0.0	4.5	1.6	1.0	0.5	0.0	0.0	0.0
		D2	4.1	0.6	0.4	0.2	0.0	0.0	0.0	4.5	1.6	1.0	0.5	0.0	0.0	0.0
		E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		F	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		G	0.8	0.6	0.4	0.2	0.0	0.0	0.0	**1.1**	**1.6**	**1.0**	**0.5**	**0.5**	0.0	0.0
		H	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Prepared by: LCT 09/27/21
Checked by: GJH 09/27/21

Notes:
ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant
1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.
= Critical Scenario Deficit

Table 6-1
Emergency Scenarios and Potential Internal Infrastructure Redundancy Projects

				Relevant Considerations		
Water Supply Risk	**Emergency Scenario**	**Internal Infrastructure Redundancy Project**	**Potential Environmental Impacts**	**Withdrawal Permit Impacts**	**Water Quality Impacts**	**Community Impacts**
A. Failure of largest water treatment plant (WTP)	A1. Power supply failure of largest WTP	Backup Generator	◊	-	-	-
	A2. Critical asset failure at largest WTP (e.g., loss of clearwell, loss of chemical treatment)	Unit Process Redundancy	-	-	-	-
B. Short-term catastrophic failure of a water distribution system	Critical transmission main failure from largest WTP or interconnection	-	-	-	-	-
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers a boil water notice	-	-	-	-	-
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	New Well/pumps New WTP New Surface Water Source Raw water transmission main	◊	◊	◊	◊
	D2. Chemical contamination of largest raw water source	New Well/pumps New WTP New Surface Water Source Raw water transmission main	◊	◊	◊	◊
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	New Well/pumps New WTP New Surface Water Source Raw water transmission main	◊	◊	◊	◊
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	New Well New WTP New Surface Water Source	◊	◊	◊	◊

Prepared by: GJH 02/11/21
Checked by: LCT 03/25/21

Notes:
ADD - average daily demand
WTP - water treatment plant

Table 6-2
Potential Projects and Details

							System Impacts		
County	**Qualified Water System**	**Project Number**	**Potential Project Description**	**Emergency Scenario(s) Addressed**	**Maximum Capacity Added (MGD)**	**Potential Environmental Impacts**	**Withdrawal Permit / Purchased Water Impacts**	**Water Quality Impacts**	**Community Impacts**
Habersham	Baldwin	1	Interconnection: Baldwin and Cornelia; 40 feet at intersection of Baldwin Road and Airport Road	A1, A2, B, D1, D2, G, H	1.13	Low: less than 200 ft excavation	Baldwin: high Cornelia: low	Low[1]	Medium-low: excavation less than 200 feet; multijurisdictional agreement
Union	Blairsville	2	Interconnection: Coosa Water Authority and Blairsville; 1.7 miles along Blue Ridge Hwy	A1, A2, B, D1, D2, H	0.64	High: more than 5000 ft excavation; one stream crossing	Coosa Water Authority: high Blairsville: low	High	High: more than 5000 ft excavation; multijurisdictional agreement
Fannin	Blue Ridge	3	New raw water transmission main and surface water withdrawal	H	1.44	Medium-low: excavation greater than 200 but less than 5,000 feet	-	-	Medium-high: excavation greater than 200 but less than 5,000 feet; multijurisdictional agreement
Gordon	Calhoun	4	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	A1, A2, B, D1, D2	0.83	Low: less than 200 ft excavation	Chatsworth: low Calhoun: low	Low[1]	Medium-low: excavation less than 200 feet; multijurisdictional agreement
Catoosa	Catoosa Utility District Authority	-	No recommended project	-	-	-	-	-	-
Floyd	Cave Spring	-	No recommended project	-	-	-	-	-	-
Polk	Cedartown		No recommended project	-	-	-	-	-	-
Murray	Chatsworth	4	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	A1, A2, B, D1, D2, G, H	0.83	Low: less than 200 ft excavation	Chatsworth: low Calhoun: low	Low[1]	Medium-low: excavation less than 200 feet; multijurisdictional agreement
Chattooga	Chattooga County	-	No recommended project	-	-	-	-	-	-
Walker	Chickamauga	-	No recommended project	-	-	-	-	-	-
Habersham	Clarkesville	5	Interconnection: Clarkesville and Demorest; 30 feet at Intersection of Hwy 197 and Canterberry Trail	A1, A2, B, D1, D2, H	0.64	Low: less than 200 ft excavation	Clarkesville: high Demorest: high	High	Medium-low: excavation less than 200 feet; multijurisdictional agreement
White	Cleveland	-	No recommended project	-	-	-	-	-	-
Union	Coosa Water Authority	6	New Well and WTP	A1, A2, B, D1, D2	0.2[(2)]	Medium-low: less than 200 ft excavation; no regional groundwater resource gaps for crystalline rock aquifers	High	Low	Medium-low: offsite excavation less than 200 ft
		2	Interconnection: Coosa Water Authority and Blairsville; 1.7 miles along Blue Ridge Hwy	A1, A2, B, D1, D2, H	0.64	High: more than 5000 ft excavation; one stream crossing	Coosa Water Authority: high Blairsville: low	High	High: more than 5000 ft excavation; multijurisdictional agreement
Habersham	Cornelia	1	Interconnection: Baldwin and Cornelia; Intersection of Baldwin Road and Airport Road	A1, A2, B, D1, D2, G, H	1.13	Low: less than 200 ft excavation	Baldwin: high Cornelia: low	Low[1]	Medium-low: excavation less than 200 feet; multijurisdictional agreement
		7	Interconnection: Cornelia and Demorest; Multiple options near Historic US 441	A1, A2, B, D1, D2, G	1.13	Low: less than 200 ft excavation	Cornelia: low Demorest: high	High	Medium-low: excavation less than 200 feet; multijurisdictional agreement

Table 6-2
Potential Projects and Details

							System Impacts		
County	**Qualified Water System**	**Project Number**	**Potential Project Description**	**Emergency Scenario(s) Addressed**	**Maximum Capacity Added (MGD)**	**Potential Environmental Impacts**	**Withdrawal Permit / Purchased Water Impacts**	**Water Quality Impacts**	**Community Impacts**
Dade	Dade County	8	New Well and WTP	A1, A2, B, D1, D2, H	0.50[(2)]	Medium-low: less than 200 ft excavation; no regional groundwater resource gaps for Paleozoic rock aquifers	High	Low	Medium-low: offsite excavation less than 200 ft
Lumpkin	Dahlonega	9	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 miles along Hwy 19	A1, A2, B, D1, D2, G, H	1.13	High: more than 5000 ft excavation; two stream crossings	Dahlonega: low Etowah Water & Sewer Auth.: low	High	High: more than 5000 ft excavation; multijurisdictional agreement
Whitfield	Dalton	-	No recommended project	-	-	-	-	-	-
Habersham	Demorest	5	Interconnection: Clarkesville and Demorest; 30 feet at intersection of Hwy 197 and Canterberry Trail	A1, A2, B, D1, D2	0.64	Low: less than 200 ft excavation	Clarkesville: high Demorest: high	High	Medium-low: excavation less than 200 feet; multijurisdictional agreement
		7	Interconnection: Cornelia and Demorest; Multiple options near Historic US 441	A1, A2, B, D1, D2	1.13	Low: less than 200 ft excavation	Cornelia: low Demorest: high	High	Medium-low: excavation less than 200 feet; multijurisdictional agreement
		10	Interconnection: Demorest and White County; 3,000 ft along Clarksville Hwy/Hwy 115	A1, A2, B, D1, D2	0.64	High: excavation greater than 200 but less than 5,000 feet; one stream crossing	Demorest: high White County: medium-low	High	Medium-high: excavation greater than 200 but less than 5,000 feet; multijurisdictional agreement
Gilmer	Ellijay-Gilmer County	11	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles along Round Top Road, Knight Road, and Barnes Mtn Road	A1, A2, B, D1, D2, H	1.13	High: more than 5000 ft excavation	Ellijay-Gilmer County: medium-low Pickens County: low	Low[1]	High: more than 5000 ft excavation; multijurisdictional agreement
Dawson	Etowah Water & Sewer Auth.	9	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 miles along Hwy 19	A1, A2, B, D1, D2, G, H	1.13	High: more than 5000 ft excavation; two stream crossings	Dahlonega: low Etowah Water & Sewer Auth.: low	High	High: more than 5000 ft excavation; multijurisdictional agreement
Floyd	Floyd County	-	No recommended project	-	-	-	-	-	-
Catoosa	Fort Oglethorpe	-	No recommended project	-	-	-	-	-	-
Towns	Hiawassee	12	Two New Wells and WTP	A1, A2, B, D1, D2, G	0.60[(2)]	Medium-low: less than 200 ft excavation; no regional groundwater resource gaps for crystalline rock aquifers	NA[3]	Low	Medium-low: offsite excavation less than 200 ft
		13	Upgrade existing interconnection: ability to send water from Clay County, North Carolina to Hiawassee via Towns County pipelines; Hwy 76/Hwy 288[(4)]	A1, A2, B, D1, D2, G	0.30	Low: less than 200 ft excavation	Clay County: low Hiawassee: NA	High	Medium-low: excavation less than 200 feet; multijurisdictional agreement
Pickens	Jasper	-	No recommended project	-	-	-	-	-	-
Walker	LaFayette	-	No recommended project	-	-	-	-	-	-

Table 6-2
Potential Projects and Details

							System Impacts		
County	**Qualified Water System**	**Project Number**	**Potential Project Description**	**Emergency Scenario(s) Addressed**	**Maximum Capacity Added (MGD)**	**Potential Environmental Impacts**	**Withdrawal Permit / Purchased Water Impacts**	**Water Quality Impacts**	**Community Impacts**
Fannin	McCaysville	14	Two New Wells and WTP	A1, A2, B, D1, D2, H	0.60[(2)]	Medium-low: less than 200 ft excavation; no regional groundwater resource gaps for crystalline rock aquifers	NA[3]	Low	Medium-low: offsite excavation less than 200 ft
Union	Notla Water Authority	15	Two New Wells and WTP	A1, A2, B, D1, D2, G	0.60[(2)]	Medium-low: less than 200 ft excavation; no regional groundwater resource gaps for crystalline rock aquifers	High	Low	Medium-low: offsite excavation less than 200 ft
Pickens	Pickens County	11	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles along Round Top Road, Knight Road, and Barnes Mtn Road	A1, A2, B, D1, D2, H	1.13	High: more than 5000 ft excavation	Ellijay-Gilmer County: medium-low Pickens County: low	Low[1]	High: more than 5000 ft excavation; multijurisdictional agreement
Polk	Polk County	-	No recommended project	-	-	-	-	-	-
Polk	Rockmart	-	No recommended project	-	-	-	-	-	-
Floyd	Rome	-	No recommended project	-	-	-	-	-	-
Chattooga	Summerville	-	No recommended project	-	-	-	-	-	-
Towns	Towns County	-	No recommended project	-	-	-	-	-	-
Walker	Walker County	-	No recommended project	-	-	-	-	-	-
White	White County	10	Interconnection: Demorest and White County; 3,000 ft along Clarksville Hwy/Hwy 115	A1, A2, B, D1, D2, G	0.64	High: excavation greater than 200 but less than 5,000 feet; one stream crossing	Demorest: high White County: medium-low	High	Medium-high: excavation greater than 200 but less than 5,000 feet; multijurisdictional agreement

Prepared by: GJH 11/09/21
Checked by: LCT 12/01/21

Notes:

ft - feet
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Two QWS with regular sales/purchases are assumed to have low water quality impacts.
2. This value was estimated based on QWS-specific information.
3. The system would need a new groundwater withdrawal permit.
4. This is currently a one-way interconnection into Towns County. The upgrade would reverse flow through one existing 6-inch diameter interconnection.

Table 6-3
Interconnection Project Capacity Added

Project Number	Potential Project Description	Water System Involved	Pipe Diameter (inches)	Average Pressure (psi)	2050 Excess Capacity (MGD)	Maximum Capacity Added (MGD)
1	Interconnection: Baldwin and Cornelia; Intersection of Baldwin Road and Airport Road	Baldwin	8	103	-0.5	1.13
		Cornelia	8	90	1.3	1.13
2	Interconnection: Coosa Water Authority and Blairsville; 1.7 miles along Blue Ridge Hwy	Coosa Water Authority	6	130-230	-0.1	0.64
		Blairsville	6	21-180	1.2	0.64
4	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	Chatsworth	8	90-100	4.8	0.83
		Calhoun	8	105	18.4	0.83
5	Interconnection: Clarkesville and Demorest; 30 feet at Intersection of Hwy 197 and Canterberry Trail	Clarkesville	6	79	0.002	0.64
		Demorest	6	105	0.1[(1)]	0.64
7	Interconnection: Cornelia and Demorest; Multiple options near Historic US 441	Cornelia	8	90	1.3	1.13
		Demorest	8	105	-0.5[(1)]	1.13
9	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 miles along Hwy 19	Dahlonega	8	150	4.7	1.13
		Etowah Water & Sewer Auth.	8	99	1.3	1.13
10	Interconnection: Demorest and White County; 3,000 ft along Clarksville Hwy/Hwy 115	Demorest	6	105	0.1[(1)]	0.64
		White County	6	100	0.4	0.64
11	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles along Round Top Road, Knight Road, and Barnes Mtn Road	Ellijay-Gilmer County	8	110	0.6	1.13
		Pickens County	8	55-105	5.0[(2)]	1.13
13	Upgrade existing interconnection: ability to send water from Clay County, North Carolina to Hiawassee via Towns County pipelines; Hwy 76/Hwy 288	Hiawassee	6	115	-0.3	0.64
		Clay County	6	unknown	unknown	0.00

Prepared by: GJH 11/16/21
Checked by: LCT 12/01/21

Notes:
MGD - million gallons per day
NA - not applicable
psi - pound-force per square inch
1. Demorest receives most of its water supply via purchased water, so the 2050 Maximum Possible Purchased Water value (excluding the amount from the beneficiary QWS of this potential project) was added to the 2050 Excess Capacity.
2. Pickens County is a purchase-only QWS, so the 2050 Maximum Possible Purchased Water value (excluding the amount from Ellijay-Gilmer County) was added to the 2050 Excess Capacity.

Table 6-4
Planning-Level Costs for Potential Projects

Project Number	Qualified Water System(s) Benefitted	Potential Project Description	Maximum Capacity Added (MGD)	Length of Pipes (ft)	Project Specifics	Estimated Unit Cost ($)	Additional Cost Items	Additional Cost ($)	Total Estimated Cost ($)	Macro-Level Project Timeframe
1	Baldwin Cornelia	Interconnection: Baldwin and Cornelia; Intersection of Baldwin Road and Airport Road	1.13	40	8-inch diameter DIP	$ 170	(1) control valve station	$ 39,050	$ 45,900	12 months
2	Coosa Water Authority Blairsville	Interconnection: Coosa Water Authority and Blairsville; 1.7 miles along Blue Ridge Hwy	0.64	8976	6-inch diameter DIP	$ 140	(1) control valve station (1) 50-HP booster pump station	$ 1,107,500	$ 2,364,100	16 months
3	Blue Ridge	New raw water transmission main and surface water withdrawal	1.44	2000	10-inch diameter DIP	$ 200	(2) 500 gpm vertical turbine pumps	$ 245,900	$ 645,900	12 months
4	Chatsworth Calhoun	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	0.83	-	8-inch diameter DIP	-	(1) 50-HP booster pump station	$ 1,071,000	$ 1,071,000	16 months
5	Clarkesville Demorest	Interconnection: Clarkesville and Demorest; 30 feet at Intersection of Hwy 197 and Canterberry Trail	0.64	30	6-inch diameter DIP	$ 140	(1) control valve station	$ 36,485	$ 40,700	12 months
6	Coosa Water Authority	New Well and WTP	0.20	175	6-inch diameter DIP	$ 140	(1) new groundwater source (1) new WTP (1) 200 KW generator	$ 872,900	$ 897,400	12 months
7	Cornelia Demorest	Interconnection: Cornelia and Demorest; Multiple options near Historic U.S. 441	1.13	30	8-inch diameter DIP	$ 170	(1) control valve station	$ 39,050	$ 44,200	12 months
8	Dade County	New Well and WTP	0.50	175	6-inch diameter DIP	$ 140	(1) new groundwater source (1) new WTP	$ 2,044,800	$ 2,069,300	12 months
9	Dahlonega Etowah Water & Sewer Auth.	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 miles along Hwy 19	1.13	27456	8-inch diameter DIP	$ 170	(1) control valve station (1) 100-HP booster pump station	$ 1,739,050	$ 6,406,600	16 months
10	Demorest White County	Interconnection: Demorest and White County; 3,000 ft along Clarksville Hwy/Hwy 115	0.64	3000	6-inch diameter DIP	$ 140	(1) control valve station (1) 50-HP booster pump station	$ 1,107,500	$ 1,527,500	16 months
11	Ellijay-Gilmer County Pickens County	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles along Round Top Road, Knight Road, and Barnes Mtn Road	1.13	30624	8-inch diameter DIP	$ 170	(1) control valve station (1) 200-HP booster pump station	$ 2,735,100	$ 7,941,200	16 months
12	Hiawassee	Two New Wells and WTP	0.60	175	6-inch diameter DIP	$ 140	(2) new groundwater source (1) new WTP (1) 200 KW generator	$ 2,536,100	$ 2,560,600	12 months
13	Hiawassee	Upgrade existing interconnection: ability to send water from Clay County, North Carolina to Hiawassee via Towns County pipelines; Hwy 76/Hwy 288	0.30	-	6-inch diameter DIP	-	-	-	$ 50,000	12 months

Table 6-4
Planning-Level Costs for Potential Projects

Project Number	Qualified Water System(s) Benefitted	Potential Project Description	Maximum Capacity Added (MGD)	Length of Pipes (ft)	Project Specifics	Estimated Unit Cost ($)	Additional Cost Items	Additional Cost ($)	Total Estimated Cost ($)	Macro-Level Project Timeframe
14	McCaysville	Two New Wells and WTP	0.60	175	6-inch diameter DIP	$ 140	(2) new groundwater source (1) new WTP (1) 200 KW generator	$ 2,536,100	$ 2,560,600	12 months
15	Notla Water Authority	Two New Wells and WTP	0.60	175	6-inch diameter DIP	$ 140	(2) new groundwater source (1) new WTP (1) 200 KW generator	$ 2,536,100	$ 2,560,600	12 months

Prepared by: GJH 11/17/21
Checked by: LCT 12/01/21

Notes:
DIP - ductile iron pipe
ft - feet
gpm - gallons per minute
HP - horsepower
KW - kilowatts
MGD - million gallons per day
WTP - water treatment plant

Table 7-1
Potential Project Scoring Criteria Matrix

		Assigned Score				
	Criterion	**1**	**2**	**3**	**4**	**Weighting**
1	Systems Benefitted	One (Internal Project)	Mutually Benefits One Non-QWS	Mutually Benefits Two or More Non-QWS	Mutually Benefits Another QWS	1
2	Population Benefitted	<10,000	10,000 - 20,000	20,000 - 50,000	>50,000	3
3	Critical Scenario Duration (days)	1	3	30	120	1
4	Added Capacity as a Percent of Total Demand (%)	0-25%	26-50%	50-76%	>76%	2
5	Cost ($)	> $2,000,000	$1,000,000 - $2,000,000	$150,000 - $1,000,000	< $150,000	3
6	Potential Environmental Impacts	High	Medium-high	Medium-low	Low	3
7	Potential System and Community Impacts	High	Medium-high	Medium-low	Low	3
8	Excess Capacity Index	Positive Excess Capacity >0.5	Positive Excess Capacity <0.5	Negative Excess Capacity	No Excess Capacity	2

Prepared by: GJH 11/18/21
Checked by: LCT 12/01/21

Notes:
QWS - qualified water system

Table 7-2
Potential Project Criteria Scores and Weight Calculations

			1: Systems Benefitted		2: Population Benefitted		3: Critical Scenario Duration	
Project Number	**Water System(s) Benefitted**	**Potential Project Description**	**Water System(s) Benefitted**	**Score: Systems Benefitted**	**Population Benefitted**	**Score: Population Benefitted**	**Emergency Scenario(s) Addressed**	**Score: Critical Scenario Duration**
1	Baldwin Cornelia	Interconnection: Baldwin and Cornelia; Baldwin Road and Airport Road	Baldwin Cornelia	4	23,800	3	A1, A2, B, D1, D2, G, H	4
2	Coosa Water Authority Blairsville	Interconnection: Coosa Water Auth. and Blairsville; 1.7 miles along Blue Ridge Hwy	Coosa Water Authority Blairsville	4	7,900	1	A1, A2, B, D1, D2, H	4
3	Blue Ridge	New raw water transmission main and surface water withdrawal	Blue Ridge	1	8,000	1	H	4
4	Chatsworth Calhoun	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	Chatsworth Calhoun	4	87,200	4	A1, A2, B, D1, D2	3
5	Clarkesville Demorest	Interconnection: Clarkesville and Demorest; 30 feet at Hwy 197 and Canterberry Trail	Clarkesville Demorest	4	23,300	3	A1, A2, B, D1, D2, H	4
6	Coosa Water Authority	New Well and WTP	Coosa Water Authority	1	5,300	1	A1, A2, B, D1, D2	3
7	Cornelia Demorest	Interconnection: Cornelia and Demorest; Multiple options near Historic US 441	Cornelia Demorest	4	25,000	3	A1, A2, B, D1, D2, G	3
8	Dade County	New Well and WTP	Dade County	1	18,700	2	A1, A2, B, D1, D2, H	4
9	Dahlonega Etowah Water & Sewer Auth.	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 mi; Hwy 19	Dahlonega Etowah Water & Sewer Auth.	4	24,200	3	A1, A2, B, D1, D2, G, H	4
10	Demorest White County	Interconnection: Demorest and White Co.; 3,000 ft on Clarksville Hwy/Hwy 115	Demorest White County	4	28,900	3	A1, A2, B, D1, D2, G	3
11	Ellijay-Gilmer County Pickens County	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles	Ellijay-Gilmer County Pickens County	4	23,500	3	A1, A2, B, D1, D2, H	4
12	Hiawassee	Two New Wells and WTP	Hiawassee	1	15,900	2	A1, A2, B, D1, D2, G	3
13	Hiawassee	Upgrade existing interconnection: ability to send water from Clay County, NC to Hiawassee via Towns County	Hiawassee	1	15,900	2	A1, A2, B, D1, D2, G	3
14	McCaysville	Two New Wells and WTP	McCaysville	1	8,400	1	A1, A2, B, D1, D2, H	4
15	Notla Water Authority	Two New Wells and WTP	Notla Water Authority	1	15,600	2	A1, A2, B, D1, D2, G	3

Notes: MGD-million gallons per day; NA-not applicable; WTP-water treatment plant

Table 7-2
Potential Project Criteria Scores and Weight Calculations

			4: Added Capacity as a Percent of Total Demand					5: Cost	
Project Number	**Water System(s) Benefitted**	**Potential Project Description**	**Maximum Capacity Added (MGD)**	**2050 Total Demand (MGD)**	**Capacity as a Percent of Total Demand (%)**	**Individual Scores**	**Score: Added Capacity as a Percent of Total Demand**	**Cost ($)**	**Score: Cost**
1	Baldwin Cornelia	Interconnection: Baldwin and Cornelia; Baldwin Road and Airport Road	1.13	Baldwin: 4.54 Cornelia: 2.75	Baldwin: 25% Cornelia: 41%	Baldwin: 1 Cornelia: 2	1.5	$ 45,900	4
2	Coosa Water Authority Blairsville	Interconnection: Coosa Water Auth. and Blairsville; 1.7 miles along Blue Ridge Hwy	0.64	Coosa Water Auth.: 0.73 Blairsville: 0.41	Coosa Water Auth.: 88% Blairsville: 156%	Coosa Water Auth.: 4 Blairsville: 4	4	$ 2,364,100	1
3	Blue Ridge	New raw water transmission main and surface water withdrawal	1.44	0.86	167%	-	4	$ 645,900	3
4	Chatsworth Calhoun	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	0.83	Chatsworth: 2.66 Calhoun: 12.40	Chatsworth: 31% Calhoun: 7%	Chatsworth: 2 Calhoun: 1	1.5	$ 1,071,000	2
5	Clarkesville Demorest	Interconnection: Clarkesville and Demorest; 30 feet at Hwy 197 and Canterberry Trail	0.64	Clarkesville: 1.50 Demorest: 4.15	Clarkesville: 42% Demorest: 15%	Clarkesville: 2 Demorest: 1	1.5	$ 40,700	4
6	Coosa Water Authority	New Well and WTP	0.20	0.73	27%	-	2	$ 897,400	3
7	Cornelia Demorest	Interconnection: Cornelia and Demorest; Multiple options near Historic US 441	1.13	Cornelia: 2.75 Demorest: 4.15	Cornelia: 41% Demorest: 27%	Cornelia: 2 Demorest: 2	2	$ 44,200	4
8	Dade County	New Well and WTP	0.50	2.10	24%	-	1	$ 2,069,300	1
9	Dahlonega Etowah Water & Sewer Auth.	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 mi; Hwy 19	1.13	Dahlonega: 1.35 Etowah Water & Sewer Auth.: 4.21	Dahlonega: 84% Etowah Water & Sewer Auth.: 27%	Dahlonega: 4 Etowah Water & Sewer Auth.: 2	3	$ 6,406,600	1
10	Demorest White County	Interconnection: Demorest and White Co.; 3,000 ft on Clarksville Hwy/Hwy 115	0.64	Demorest: 4.15 White County: 1.57	Demorest: 15% White County: 41%	Demorest: 1 White County: 2	1.5	$ 1,527,500	2
11	Ellijay-Gilmer County Pickens County	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles	1.13	Ellijay-Gilmer County: 3.96 Pickens County: 1.29	Ellijay-Gilmer County: 28% Pickens County: 87%	Ellijay-Gilmer County: 2 Pickens County: 4	3	$ 7,941,200	1
12	Hiawassee	Two New Wells and WTP	0.60	3.35	18%	-	1	$ 2,560,600	1
13	Hiawassee	Upgrade existing interconnection: ability to send water from Clay County, NC to Hiawassee via Towns County	0.30	3.35	9%	-	1	$ 50,000	4
14	McCaysville	Two New Wells and WTP	0.60	0.90	66%	-	3	$ 2,560,600	1
15	Notla Water Authority	Two New Wells and WTP	0.60	2.14	28%	-	2	$ 2,560,600	1

Notes: MGD-million gallons per day; NA-not applicable; WTP-water treatment plant

Table 7-2
Potential Project Criteria Scores and Weight Calculations

			6: Potential Environmental Impacts		7: Potential System and Community Impacts				
Project Number	**Water System(s) Benefitted**	**Potential Project Description**	**Potential Environmental Impacts**	**Score: Potential Environmental Impacts**	**Withdrawal Permit / Purchased Water Impacts**	**Water Quality Impacts**	**Community Impacts**	**Individual Scores**	**Score: Community Impacts**
1	Baldwin Cornelia	Interconnection: Baldwin and Cornelia; Baldwin Road and Airport Road	Low	4	Baldwin: high Cornelia: low	Low	Medium-low	Withdrawal: (1+4)/2 = 2.5 Water Quality: 4 Community: 3	3.17
2	Coosa Water Authority Blairsville	Interconnection: Coosa Water Auth. and Blairsville; 1.7 miles along Blue Ridge Hwy	High	1	Coosa Water Auth.: high Blairsville: low	High	High	Withdrawal: (1+4)/2 = 2.5 Water Quality: 1 Community: 1	1.5
3	Blue Ridge	New raw water transmission main and surface water withdrawal	Medium-low	3	NA	NA	Medium-high	-	2
4	Chatsworth Calhoun	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	Low	4	Chatsworth: low Calhoun: low	Low	Medium-low	Withdrawal: (4+4)/2 = 4 Water Quality: 4 Community: 3	3.67
5	Clarkesville Demorest	Interconnection: Clarkesville and Demorest; 30 feet at Hwy 197 and Canterberry Trail	Low	4	Clarkesville: high Demorest: high	High	Medium-low	Withdrawal: (1+1)/2 = 1 Water Quality: 1 Community: 3	1.67
6	Coosa Water Authority	New Well and WTP	Medium-low	3	High	Low	Medium-low	Withdrawal: 1 Water Quality: 4 Community: 3	2.67
7	Cornelia Demorest	Interconnection: Cornelia and Demorest; Multiple options near Historic US 441	Low	4	Cornelia: low Demorest: high	High	Medium-low	Withdrawal: (4+1)/2 = 2.5 Water Quality: 1 Community: 3	2.17
8	Dade County	New Well and WTP	Medium-low	3	High	Low	Medium-low	Withdrawal: 1 Water Quality: 4 Community: 3	2.67
9	Dahlonega Etowah Water & Sewer Auth.	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 mi; Hwy 19	High	1	Dahlonega: low Etowah Water & Sewer Auth.: low	High	High	Withdrawal: (4+4)/2 = 4 Water Quality: 1 Community: 1	2
10	Demorest White County	Interconnection: Demorest and White Co.; 3,000 ft on Clarksville Hwy/Hwy 115	High	1	Demorest: high White County: medium-low	High	Medium-high	Withdrawal: (1+3)/2 = 2 Water Quality: 1 Community: 2	1.67
11	Ellijay-Gilmer County Pickens County	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles	High	1	Ellijay-Gilmer County: medium-low Pickens County: low	Low	High	Withdrawal: (3+4)/2 = 3.5 Water Quality: 4 Community: 1	2.83
12	Hiawassee	Two New Wells and WTP	Medium-low	3	NA	Low	Medium-low	Water Quality: 4 Community: 3	3.50
13	Hiawassee	Upgrade existing interconnection: ability to send water from Clay County, NC to Hiawassee via Towns County	Low	4	Clay County: low Hiawassee: NA	High	Medium-low	Withdrawal: 4 Water Quality: 1 Community: 3	2.67
14	McCaysville	Two New Wells and WTP	Medium-low	3	NA	Low	Medium-low	Water Quality: 4 Community: 3	3.50
15	Notla Water Authority	Two New Wells and WTP	Medium-low	3	High	Low	Medium-low	Withdrawal: 1 Water Quality: 4 Community: 3	2.67

Notes: MGD-million gallons per day; NA-not applicable; WTP-water treatment plant

Table 7-2
Potential Project Criteria Scores and Weight Calculations

			8: Excess Capacity Index				Weighing Calculation								
Project Number	**Water System(s) Benefitted**	**Potential Project Description**	**2050 Excess Capacity Index**	**Individual Scores**	**Score: Excess Capacity Index**	**Absolute Score**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Weighted Score**
1	Baldwin Cornelia	Interconnection: Baldwin and Cornelia; Baldwin Road and Airport Road	Baldwin: none Cornelia: (-)	Baldwin: 4 Cornelia: 3	3.5	3.40	4	9	4	3	12	12	9.5	7	7.56
2	Coosa Water Authority Blairsville	Interconnection: Coosa Water Auth. and Blairsville; 1.7 miles along Blue Ridge Hwy	Coosa Water Auth.: none Blairsville: (+) > 0.5	Coosa Water Auth.: 4 Blairsville: 1	2.5	2.38	4	3	4	8	3	3	4.5	5	4.31
3	Blue Ridge	New raw water transmission main and surface water withdrawal	(-)	-	3	2.63	1	3	4	8	9	9	6	6	5.75
4	Chatsworth Calhoun	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	Chatsworth: (+) < 0.5 Calhoun: (+) < 0.5	Chatsworth: 2 Calhoun: 2	2	3.02	4	12	3	3	6	12	11	4	6.88
5	Clarkesville Demorest	Interconnection: Clarkesville and Demorest; 30 feet at Hwy 197 and Canterberry Trail	Clarkesville: (-) Demorest: none	Clarkesville: 3 Demorest: 4	3.5	3.21	4	9	4	3	12	12	5	7	7.00
6	Coosa Water Authority	New Well and WTP	none	-	4	2.46	1	3	3	4	9	9	8	8	5.63
7	Cornelia Demorest	Interconnection: Cornelia and Demorest; Multiple options near Historic US 441	Cornelia: (-) Demorest: none	Cornelia: 3 Demorest: 4	3.5	3.21	4	9	3	4	12	12	6.5	7	7.19
8	Dade County	New Well and WTP	(-)	-	3	2.21	1	6	4	2	3	9	8	6	4.88
9	Dahlonega Etowah Water & Sewer Auth.	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 mi; Hwy 19	Dahlonega: (+) > 0.5 Etowah Water & Sewer Auth.: (-)	Dahlonega: 1 Etowah Water & Sewer Auth.: 3	2	2.50	4	9	4	6	3	3	6	4	4.88
10	Demorest White County	Interconnection: Demorest and White Co.; 3,000 ft on Clarksville Hwy/Hwy 115	Demorest: none White County: (-)	Demorest: 4 White County: 3	3.5	2.46	4	9	3	3	6	3	5	7	5.00
11	Ellijay-Gilmer County Pickens County	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles	Ellijay-Gilmer County: (-) Pickens County: none	Ellijay-Gilmer Co.: 3 Pickens County: 4	3.5	2.79	4	9	4	6	3	3	8.5	7	5.56
12	Hiawassee	Two New Wells and WTP	none	-	4	2.31	1	6	3	2	3	9	10.5	8	5.31
13	Hiawassee	Upgrade existing interconnection: ability to send water from Clay County, NC to Hiawassee via Towns County	none	-	4	2.71	1	6	3	2	12	12	8	8	6.50
14	McCaysville	Two New Wells and WTP	(-)	-	3	2.44	1	3	4	6	3	9	10.5	6	5.31
15	Notla Water Authority	Two New Wells and WTP	(-)	-	3	2.21	1	6	3	4	3	9	8	6	5.00

Notes: MGD-million gallons per day; NA-not applicable; WTP-water treatment plant

Prepared by: GJH 11/18/21 Checked by: LCT 12/01/21

Table 7-3
Potential Project Decision-Making Summary

Project Number	Water System(s) Benefitted	Potential Project Description	Cost Per 1 MGD Yield ($/MGD)	Cost Per Individual Supplied ($/capita)	Absolute Score	Weighted Score	Manual Rank
1	Baldwin Cornelia	Interconnection: Baldwin and Cornelia; Intersection of Baldwin Road and Airport Road	$ 40,691	$ 1.93	3.40	7.56	1
2	Coosa Water Authority Blairsville	Interconnection: Coosa Water Authority and Blairsville; 1.7 miles along Blue Ridge Hwy	$ 3,722,992	$ 299.25	2.38	4.31	15
3	Blue Ridge	New raw water transmission main and surface water withdrawal	$ 448,542	$ 80.74	2.63	5.75	6
4	Chatsworth Calhoun	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	$ 1,293,478	$ 12.28	3.02	6.88	4
5	Clarkesville Demorest	Interconnection: Clarkesville and Demorest; 30 feet at Intersection of Hwy 197 and Canterberry Trail	$ 64,094	$ 1.75	3.21	7.00	3
6	Coosa Water Authority	New Well and WTP	$ 4,487,000	$ 169.32	2.46	5.63	7
7	Cornelia Demorest	Interconnection: Cornelia and Demorest; Multiple options near Historic U.S. 441	$ 39,184	$ 1.77	3.21	7.19	2
8	Dade County	New Well and WTP	$ 4,138,600	$ 110.66	2.21	4.88	14
9	Dahlonega Etowah Water & Sewer Auth.	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 miles along Hwy 19	$ 5,679,610	$ 264.74	2.50	4.88	13
10	Demorest White County	Interconnection: Demorest and White County; 3,000 ft along Clarksville Hwy/Hwy 115	$ 2,405,512	$ 52.85	2.46	5.00	11
11	Ellijay-Gilmer County Pickens County	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles along Round Top Road, Knight Road, and Barnes Mtn Road	$ 7,040,071	$ 337.92	2.79	5.56	8
12	Hiawassee	Two New Wells and WTP	$ 4,267,667	$ 161.04	2.31	5.31	10
13	Hiawassee	Upgrade existing interconnection: ability to send water from Clay County, North Carolina to Hiawassee via Towns County pipelines; Hwy 76/Hwy 288	$ 168,350	$ 3.14	2.71	6.50	5
14	McCaysville	Two New Wells and WTP	$ 4,267,667	$ 304.83	2.44	5.31	9
15	Notla Water Authority	Two New Wells and WTP	$ 4,267,667	$ 164.14	2.21	5.00	12

Prepared by: GJH 11/24/21

Checked by: LCT 12/01/21

Notes:

WTP - water treatment plant

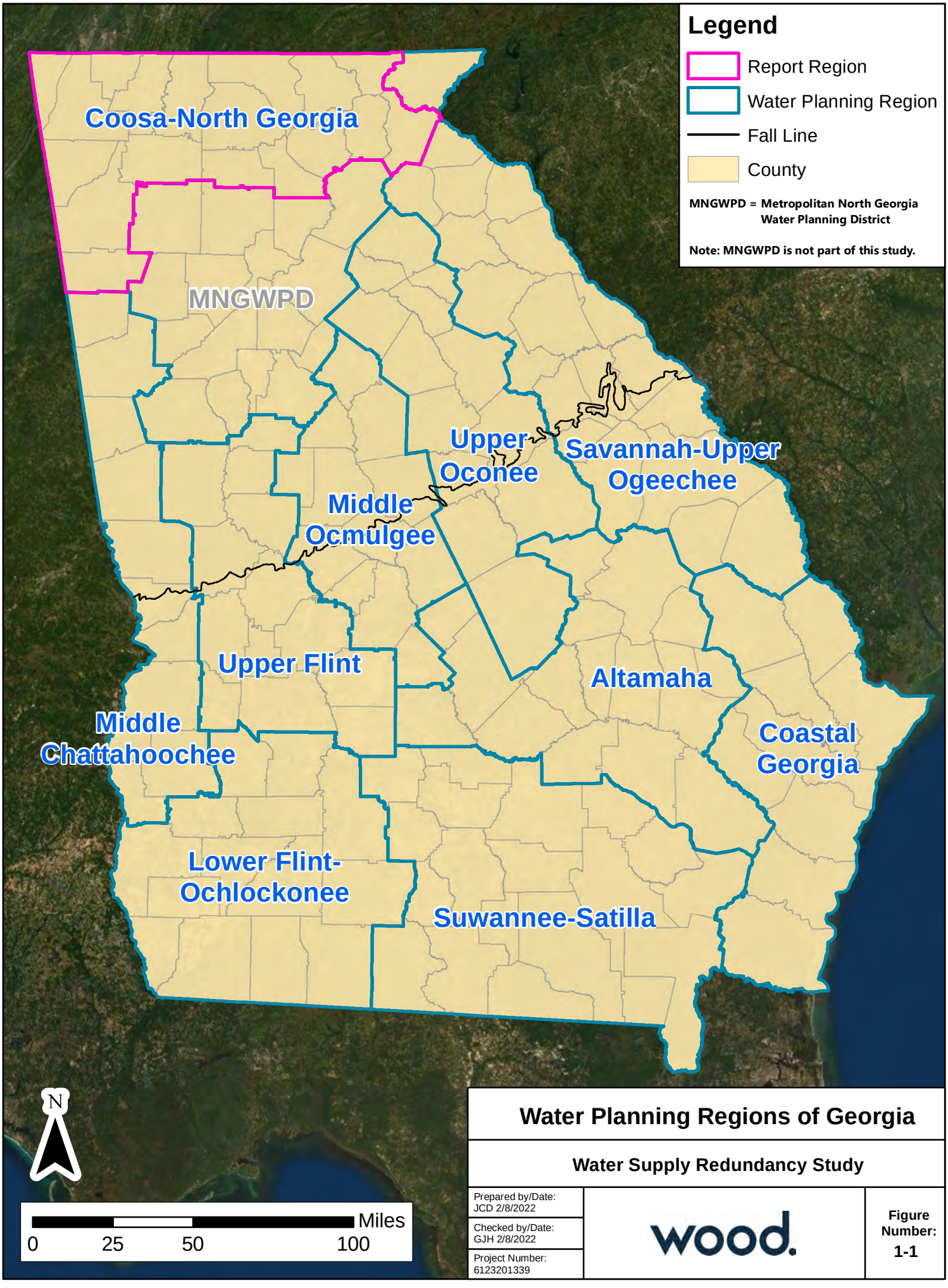
Table 7-4
Potential Projects Sorted by Final Rank Order

Project Number	Water System(s) Benefitted	Potential Project Description	Cost ($)	Final Rank
1	Baldwin Cornelia	Interconnection: Baldwin and Cornelia; Intersection of Baldwin Road and Airport Road	$ 45,900	1
7	Cornelia Demorest	Interconnection: Cornelia and Demorest; Multiple options near Historic U.S. 441	$ 44,200	2
5	Clarkesville Demorest	Interconnection: Clarkesville and Demorest; 30 feet at Intersection of Hwy 197 and Canterberry Trail	$ 40,700	3
4	Chatsworth Calhoun	Upgrade existing interconnection: Chatsworth and Calhoun; Maple Grove Church Road	$ 1,071,000	4
13	Hiawassee	Upgrade existing interconnection: ability to send water from Clay County, North Carolina to Hiawassee via Towns County pipelines; Hwy 76/Hwy 288	$ 50,000	5
3	Blue Ridge	New raw water transmission main and surface water withdrawal	$ 645,900	6
6	Coosa Water Authority	New Well and WTP	$ 897,400	7
11	Ellijay-Gilmer County Pickens County	Interconnection: Ellijay-Gilmer County and Pickens County; 5.8 miles along Round Top Road, Knight Road, and Barnes Mtn Road	$ 7,941,200	8
14	McCaysville	Two New Wells and WTP	$ 2,560,600	9
12	Hiawassee	Two New Wells and WTP	$ 2,560,600	10
10	Demorest White County	Interconnection: Demorest and White County; 3,000 ft along Clarksville Hwy/Hwy 115	$ 1,527,500	11
15	Notla Water Authority	Two New Wells and WTP	$ 2,560,600	12
9	Dahlonega Etowah Water & Sewer Auth.	Interconnection: Dahlonega and Etowah Water & Sewer Auth.; 5.2 miles along Hwy 19	$ 6,406,600	13
8	Dade County	New Well and WTP	$ 2,069,300	14
2	Coosa Water Authority Blairsville	Interconnection: Coosa Water Authority and Blairsville; 1.7 miles along Blue Ridge Hwy	$ 2,364,100	15

Prepared by: GJH 11/24/21
Checked by: LCT 12/01/21

Notes:
WTP - water treatment plant

FIGURES

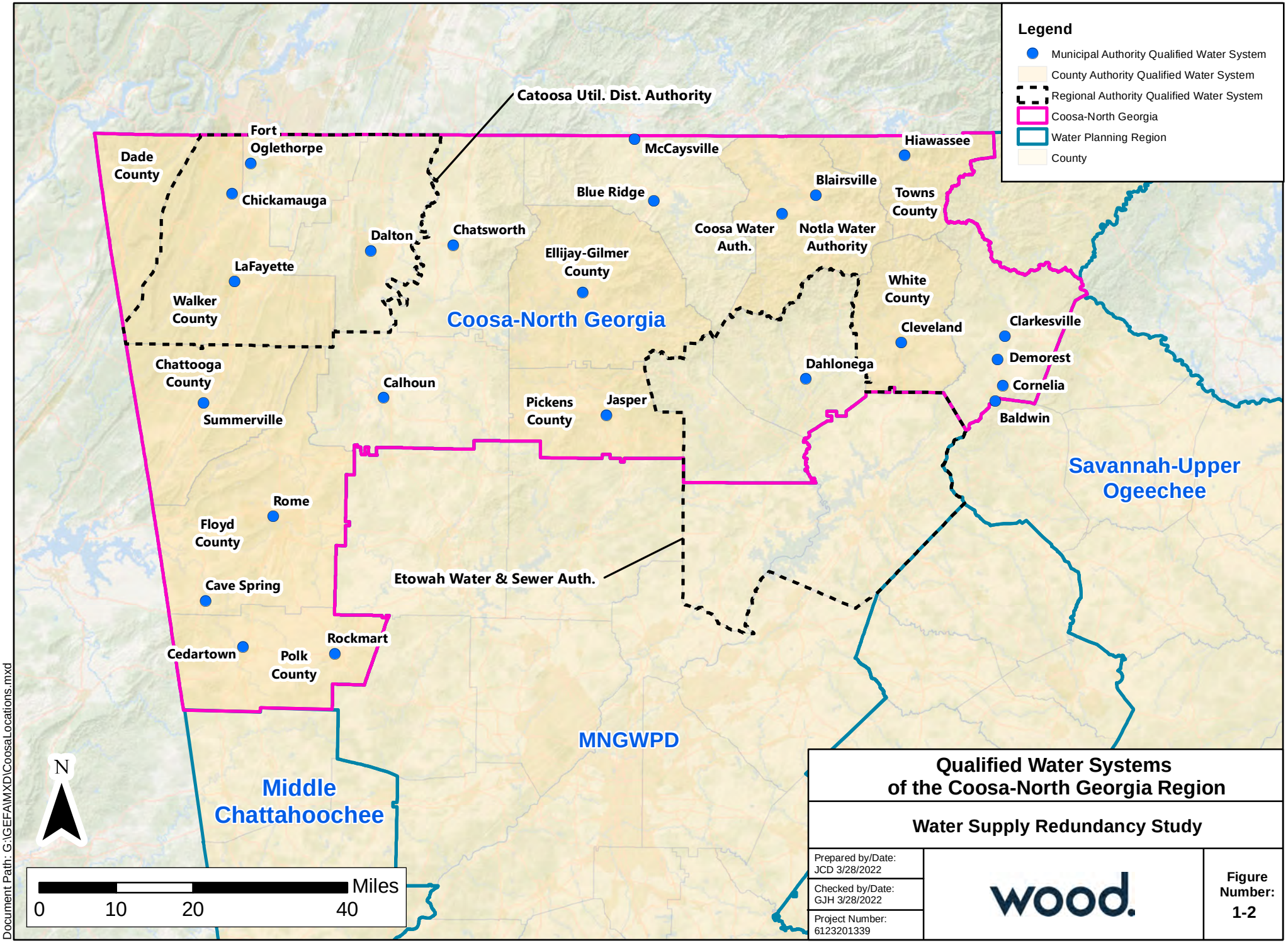


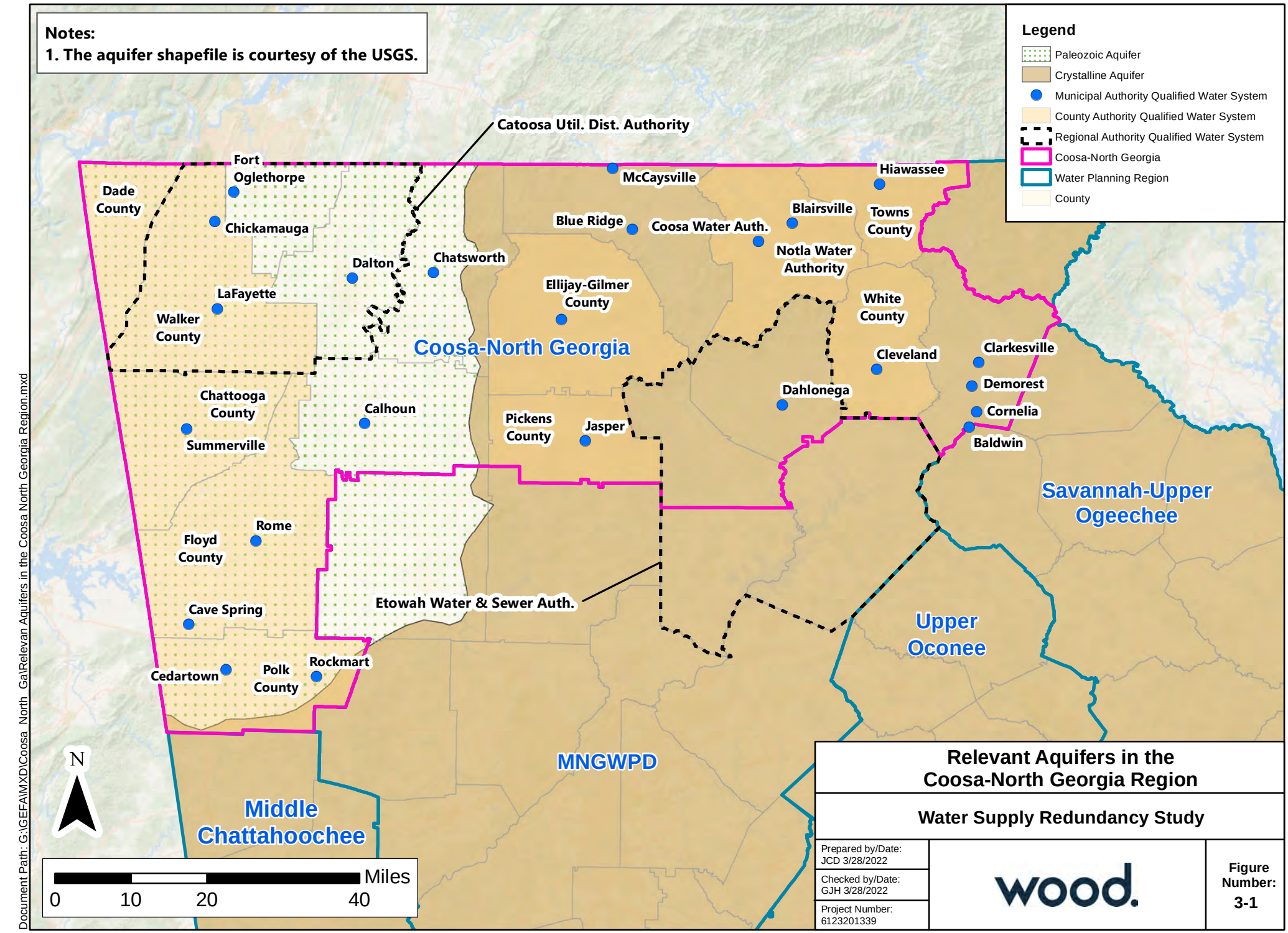
Water Planning Regions of Georgia

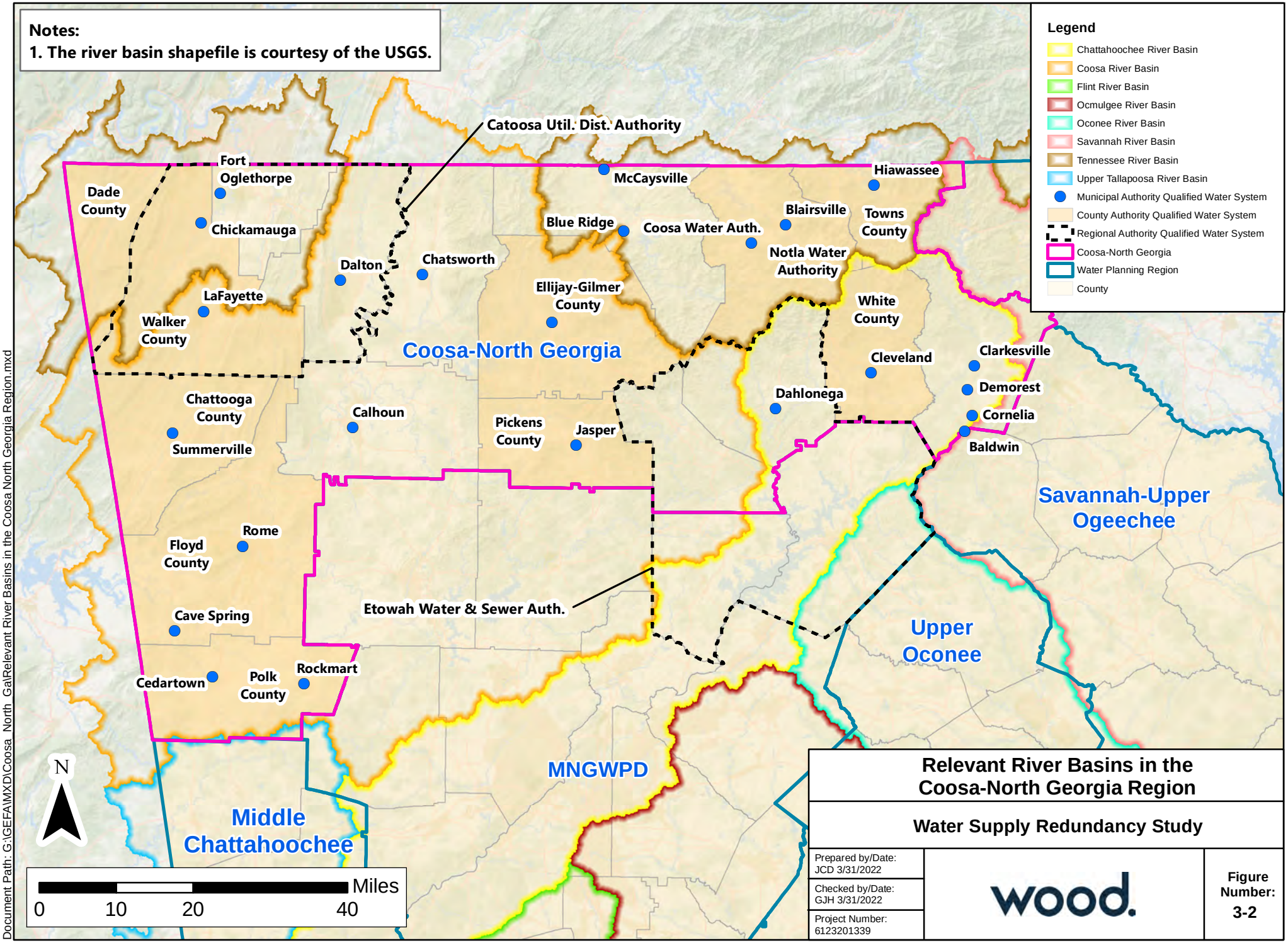
Water Supply Redundancy Study

Prepared by/Date: JCD 2/8/2022	wood.	Figure Number: 1-1
Checked by/Date: GJH 2/8/2022		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\CoosaRegion.mxd


Legend
Municipal Authority Qualified Water System
County Authority Qualified Water System
Regional Authority Qualified Water System
Coosa-North Georgia
Water Planning Region
County
Catoosa Util. Dist. Authority
Fort Oglethorpe
Dade County
Chickamauga
McCaysville
Hiawassee
Blue Ridge
Blairsville
Towns County
Coosa Water Auth.
Notla Water Authority
Dalton
Chatsworth
Ellijay-Gilmer County
LaFayette
Walker County
White County
Coosa-North Georgia
Cleveland
Clarkesville
Demorest
Cornelia
Baldwin
Dahlonega
Chattooga County
Summerville
Calhoun
Pickens County
Jasper
Savannah-Upper Ogeechee
Rome
Floyd County
Etowah Water & Sewer Auth.
Cave Spring
Rockmart
Cedartown
Polk County
MNGWPD
Middle Chattahoochee
N
0
10
20
40
Miles
Qualified Water Systems of the Coosa-North Georgia Region
Water Supply Redundancy Study
Prepared by/Date: JCD 3/28/2022
Checked by/Date: GJH 3/28/2022
Project Number: 6123201339
wood.
Figure Number: 1-2
Document Path: G:\GEFA\MXD\CoosaLocations.mxd


Notes:
1. The aquifer shapefile is courtesy of the USGS.
Legend
Paleozoic Aquifer
Crystalline Aquifer
Municipal Authority Qualified Water System
County Authority Qualified Water System
Regional Authority Qualified Water System
Coosa-North Georgia
Water Planning Region
County
Catoosa Util. Dist. Authority
Fort Oglethorpe
Dade County
Chickamauga
Dalton
Chatsworth
LaFayette
Walker County
McCaysville
Blue Ridge
Coosa Water Auth.
Blairsville
Hiawassee
Towns County
Notla Water Authority
Ellijay-Gilmer County
White County
Coosa-North Georgia
Cleveland
Clarkesville
Demorest
Cornelia
Baldwin
Dahlonega
Chattooga County
Summerville
Calhoun
Pickens County
Jasper
Savannah-Upper Ogeechee
Rome
Floyd County
Cave Spring
Etowah Water & Sewer Auth.
Upper Oconee
Cedartown
Polk County
Rockmart
MNGWPD
Middle Chattahoochee
N
0 10 20 40 Miles
Document Path: G:\GEFA\MXD\Coosa_North_Ga\Relevan Aquifers in the Coosa North Georgia Region.mxd
Relevant Aquifers in the Coosa-North Georgia Region
Water Supply Redundancy Study
Prepared by/Date: JCD 3/28/2022
Checked by/Date: GJH 3/28/2022
Project Number: 6123201339
wood.
Figure Number: 3-1



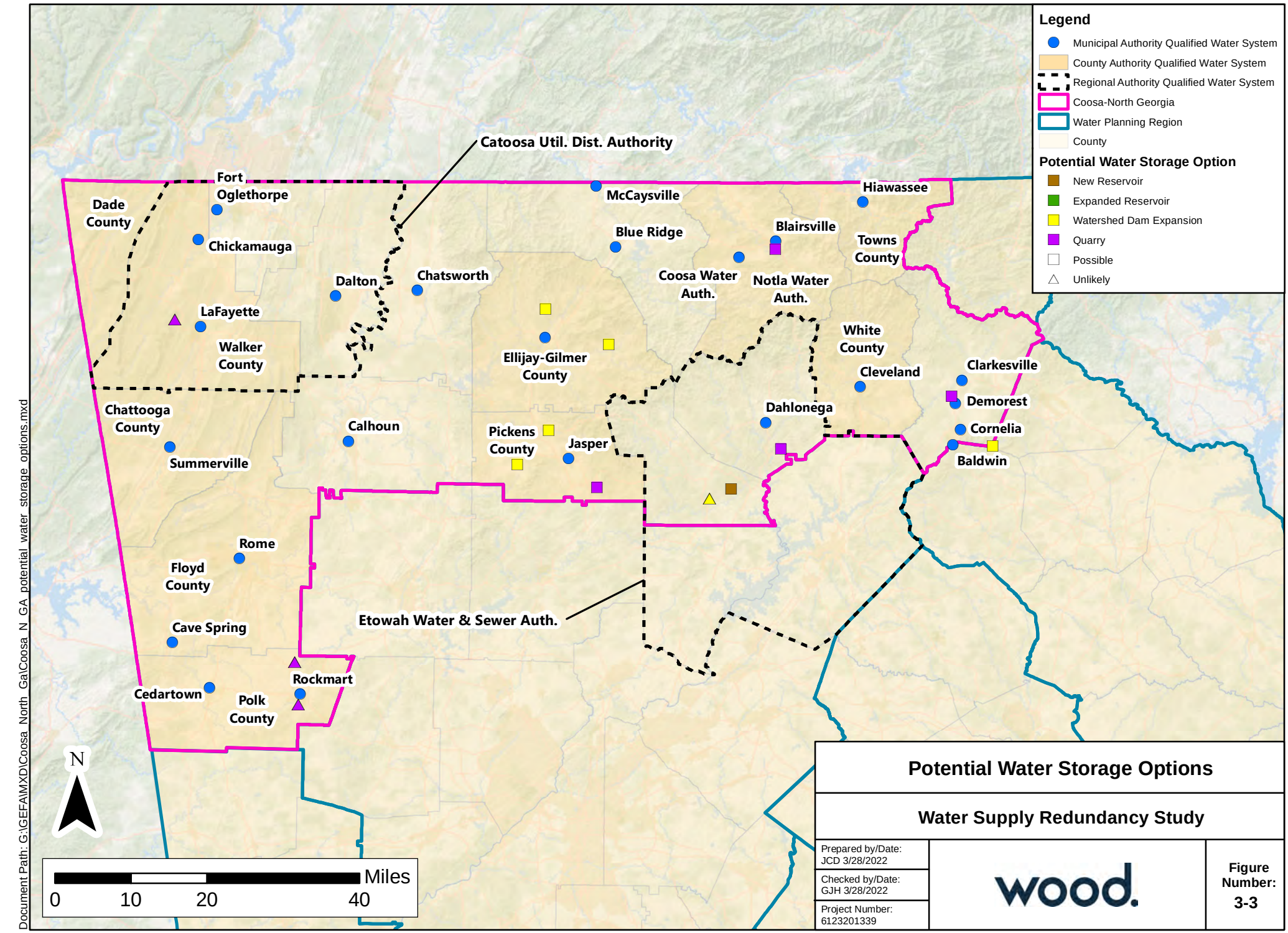
Relevant River Basins in the Coosa-North Georgia Region

Water Supply Redundancy Study

Prepared by/Date:	JCD 3/31/2022
Checked by/Date:	GJH 3/31/2022
Project Number:	6123201339

wood.

Figure Number: 3-2


Legend
Municipal Authority Qualified Water System
County Authority Qualified Water System
Regional Authority Qualified Water System
Coosa-North Georgia
Water Planning Region
County
Potential Water Storage Option
New Reservoir
Expanded Reservoir
Watershed Dam Expansion
Quarry
Possible
Unlikely
Catoosa Util. Dist. Authority
Fort Oglethorpe
Dade County
Chickamauga
Dalton
Chatsworth
McCaysville
Blue Ridge
Coosa Water Auth.
Blairsville
Notla Water Auth.
Hiawassee
Towns County
White County
Clarkesville
Cleveland
Demorest
Dahlonega
Cornelia
Baldwin
LaFayette
Walker County
Ellijay-Gilmer County
Chattooga County
Summerville
Calhoun
Pickens County
Jasper
Rome
Floyd County
Cave Spring
Etowah Water & Sewer Auth.
Rockmart
Cedartown
Polk County
N
0 10 20 40 Miles
Potential Water Storage Options
Water Supply Redundancy Study
Prepared by/Date: JCD 3/28/2022
Checked by/Date: GJH 3/28/2022
Project Number: 6123201339
wood.
Figure Number: 3-3
Document Path: G:\GEFA\MXD\Coosa_North_Ga\Coosa_N_GA_potential_water_storage_options.mxd

Notes:
1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Dade County

Catoosa Util. Dist. Authority

Chatsworth

Dalton

LaFayette

Calhoun

Summerville

Rome

Cave Spring

Polk County

Water System
- Calhoun
- Catoosa Util. Dist. Authority
- Cave Spring
- Chatsworth
- Dade County
- Dalton
- LaFayette
- Polk County
- Rome
- Summerville
- Coosa-North Georgia
- Water Planning Region

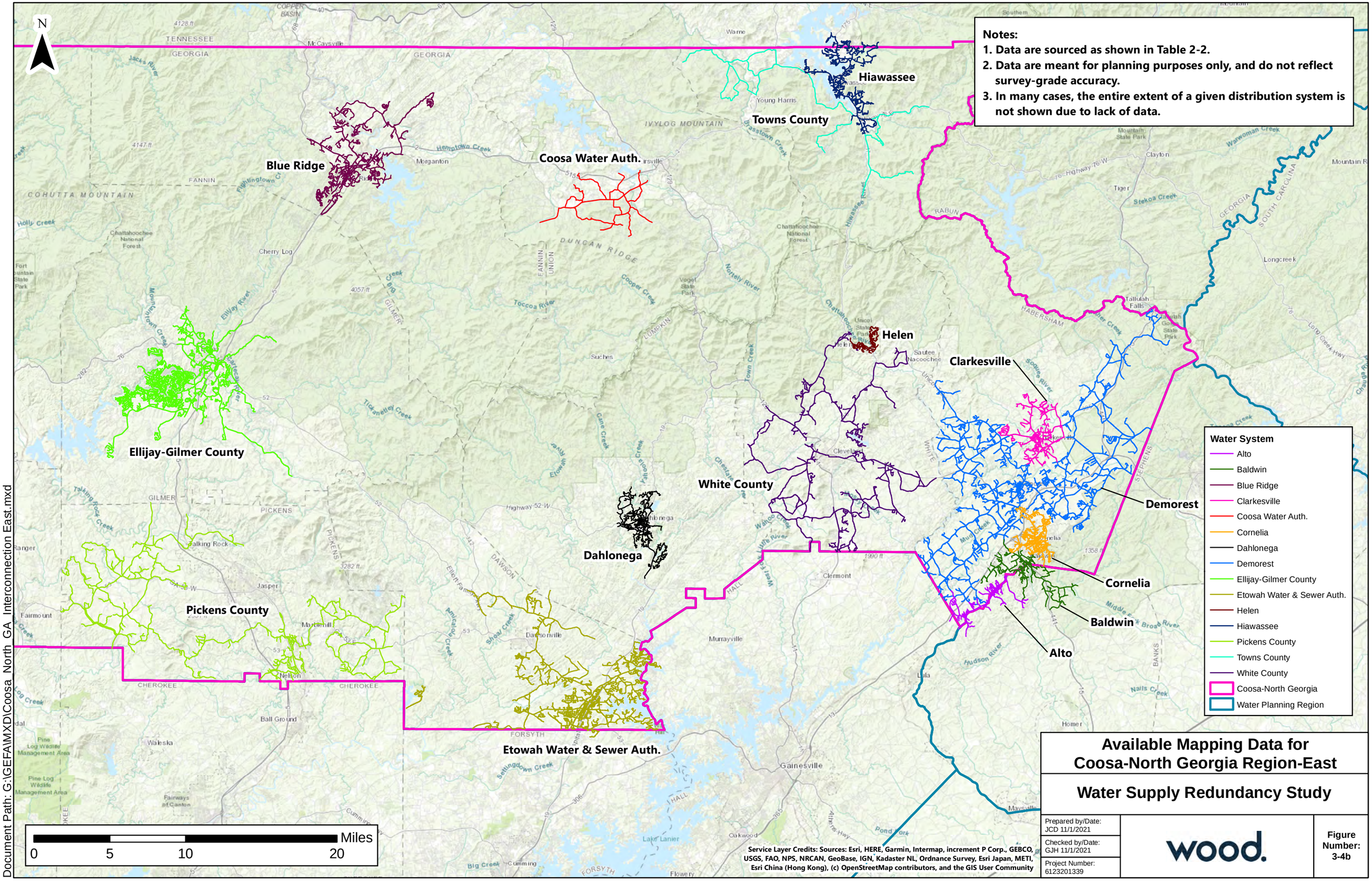
0 5 10 20 Miles

Available Mapping Data for Coosa-North Georgia Region-West

Water Supply Redundancy Study

Prepared by/Date: JCD 11/1/2021	wood.	Figure Number: 3-4a
Checked by/Date: GJH 11/1/2021		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\Coosa_North_GA_Interconnection West.mxd


N
Notes:
1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.
Blue Ridge
Coosa Water Auth.
Towns County
Hiawassee
Helen
Clarkesville
Demorest
Cornelia
Baldwin
Alto
Ellijay-Gilmer County
Pickens County
Dahlonega
White County
Etowah Water & Sewer Auth.
Water System
Alto
Baldwin
Blue Ridge
Clarkesville
Coosa Water Auth.
Cornelia
Dahlonega
Demorest
Ellijay-Gilmer County
Etowah Water & Sewer Auth.
Helen
Hiawassee
Pickens County
Towns County
White County
Coosa-North Georgia
Water Planning Region
Miles
0
5
10
20
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Available Mapping Data for Coosa-North Georgia Region-East
Water Supply Redundancy Study
Prepared by/Date: JCD 11/1/2021
Checked by/Date: GJH 11/1/2021
Project Number: 6123201339
wood.
Figure Number: 3-4b
Document Path: G:\GEFA\MXD\Coosa_North_GA_Interconnection East.mxd

Notes:
1. The river basin shapefile is courtesy of the USGS.
2. The aquifer shapefile is courtesy of the USGS.
3. Interconnection lines are schematic to reflect interconnected systems. They do not reflect pipeline locations.

Catoosa Util. Dist. Authority
Fort Oglethorpe
Chickamauga
Dade County
Walker County
Dalton
Chatsworth
LaFayette
Chattooga County
Summerville
Calhoun
Floyd County
Rome
Cave Spring
Cedartown
Rockmart
Polk County

Tennessee American Water Company
Ringgold
Eastside Utility District
Occoee Utility District
Walker County-Armuchee Valley
Trion
Lyerly
Fort Payne, AL
Pickens County
Adairsville
Bartow County
Northeast Alabama Water Authority
Paulding County
Haralson County

Water Planning Region
County
Interconnection
Crystalline Aquifer
Paleozoic Aquifer
Chattahoochee River Basin
Coosa River Basin
Tennessee River Basin
Upper Tallapoosa River Basin

2050 Total Demand (MGD)
0 -1
1-2
2-5
5-10
> 10

Raw Water Source
Groundwater
Spring
Spring and Groundwater
Surface Water
Surface Water and Groundwater
Surface Water and Spring
Surface Water, Spring, and Groundwater
Wholesale Purchased

2050 Deficit Type
None
100% ADD
65% ADD
35% ADD

0 4 8 16 Miles

Schematic of Key QWS Data for the Coosa-North Georgia Region-West

Water Supply Redundancy Study

Prepared by/Date: JCD 3/28/2022	wood.	Figure Number: 5-1a
Checked by/Date: GJH 3/28/2022		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\Coosa_North_Ga\Coosa_N_GA_QWS_key_Data_West.mxd

McCaysville
Blue Ridge
Fannin County System
Notla Water Auth.
Towns County
Hiawassee
Blairsville
Coosa Water Auth.
Walnut Mountain POA
Eagles Mountain Campground
Ellijay-Gilmer County
Huckleberry Hill Subdivision
Strong Rock Campground
White County
Cleveland
Mt. Yonah Senic Estates
Timberlane
Clarkesville
Demorest
Tallulah Falls
Toccoa
Mount Airy
Alto
Cornelia
Baldwin
Dahlonega
Teel Mountain HOA
Hall County
Lumpkin County
Pickens County
Big Canoe Subdivision
Calhoun
Fairmount
Jasper
Etowah Water & Sewer Auth.
Dawsonville
Forsyth County
Cherokee County

Water Planning Region
County
Interconnection
Crystalline Aquifer
Paleozoic Aquifer
Chattahoochee River Basin
Coosa River Basin
Oconee River Basin
Savannah River Basin
Tennessee River Basin

2050 Total Demand (MGD)

0 -1
1-2
2-5
5-10
> 10

Raw Water Source

Groundwater
Surface Water
Surface Water and Groundwater
Wholesale Purchased
Wholesale Purchased and Groundwater

2050 Deficit Type

None
100% ADD
65% ADD
35% ADD

N

0 4 8 16 Miles

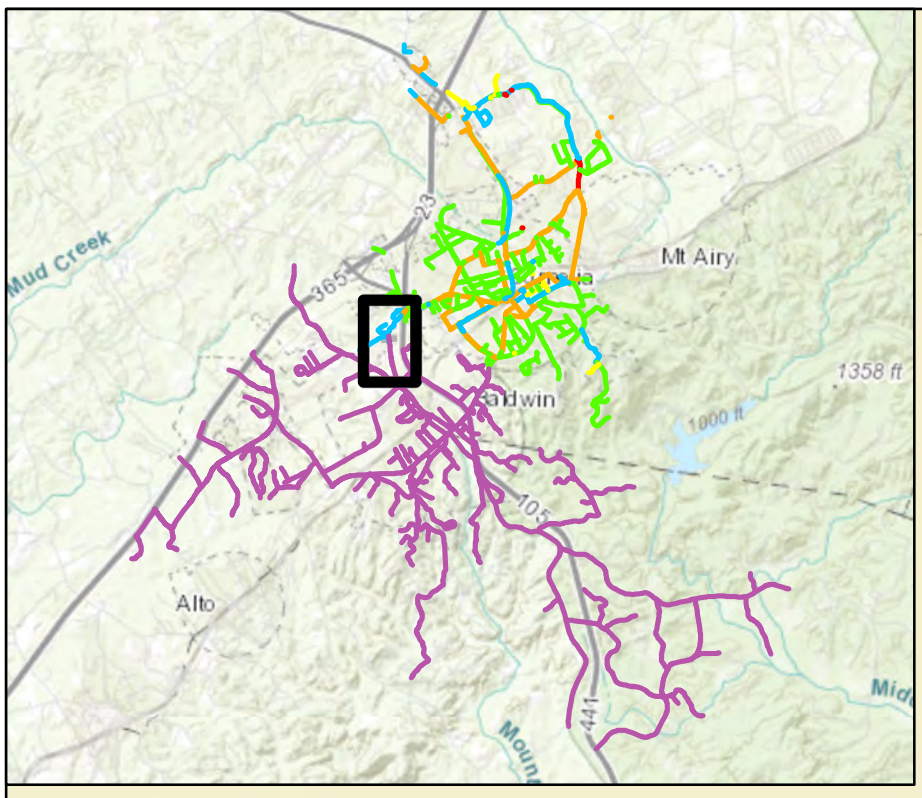
Notes:
1. The river basin shapefile is courtesy of the USGS.
2. The aquifer shapefile is courtesy of the USGS.
3. Interconnection lines are schematic to reflect interconnected systems. They do not reflect pipeline locations.

Schematic of Key QWS Data for the Coosa-North Georgia Region-East

Water Supply Redundancy Study

Prepared by/Date: JCD 3/28/2022	wood.	Figure Number: 5-1b
Checked by/Date: GJH 3/28/2022		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\Coosa_North_Ga\Coosa_N_GA_QWS_key_Data_East.mxd



Notes:
1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors,

Cornelia

Baldwin Rd

441 Byp

GA-13 N

Baldwin Rd Conn

Crown Point Dr

Tie-in Region

W Airport Rd

North Fork Little Mud Creek

Professional Dr

Highway 441 Byp

Baldwin

Airport Rd

Cornelia Pipes
Diameter (in)
- 6
- 8
- 10
- Baldwin Pipes
- Potential Tie-in Region

0 300 600 1,200 Feet

N

Baldwin and Cornelia Pipes

Water Supply Redundancy Study

Prepared by/Date: JCD 12/1/2021	wood.	Figure Number: 6-1
Checked by/Date: GJH 12/1/2021		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\Baldwin and Cornelia Pipes.mxd

Notes:

1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Potential Interconnection

Coosa Water Authority Pipes
Diameter (in)
- 2
- 3
- 4
- 6
- Potential Interconnection

0 1,000 2,000 4,000 Feet

N

Coosa Water Authority and Blairsville Potential Interconnection

Water Supply Redundancy Study

Prepared by/Date: JCD 12/1/2021	
Checked by/Date: GJH 12/1/2021	
Project Number: 6123201339	wood.

Figure Number: 6-2

Document Path: G:\GEFA\MXD\Coosa Water Authority and Blairsville Potential Interconnection.mxd

Notes:
1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors,

Clarkesville

Potential Tie-in

Demorest

Clarkesville and Demorest Pipes - Diameter (in)
- Demorest
- Clarkesville

Feet
0 1,000 2,000 4,000

N

Clarkesville and Demorest Pipes

Water Supply Redundancy Study

Prepared by/Date: JCD 12/1/2021	wood.	Figure Number: 6-3
Checked by/Date: GJH 12/1/2021		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\Clarkesville and Demorest Pipes.mxd

Notes:
1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors,

Demorest

Cornelia

System
Diameter (in)
- Demorest Pipes
- Cornelia Pipes

0 300 600 1,200 Feet

N

Cornelia and Demorest Pipes

Water Supply Redundancy Study

Prepared by/Date: JCD 12/1/2021	wood.	Figure Number: 6-4
Checked by/Date: GJH 12/1/2021		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\Cornelia and Demorest Pipes.mxd

Notes:

1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors,

Dalonegha

Potential Interconnection

Etowah Water & Sewer Auth.

Dalonegha and Etowah Water & Sewer Auth. Pipes

Diameter (in)

- 2
- 4
- 6
- 8
- 10
- 12
- Unknown
- Potential Interconnection

Feet
0 2,000 4,000 8,000

N

Document Path: G:\GEFA\MXD\Dahlonega and Etowah Water & Sewer Auth. Pipes.mxd

Dahlonega and Etowah Water & Sewer Auth. Pipes	
Water Supply Redundancy Study	
Prepared by/Date: JCD 12/1/2021	wood.
Checked by/Date: GJH 12/1/2021	
Project Number: 6123201339	**Figure Number: 6-5**

Notes:
1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors,

Demorest

Potential Interconnection

White County

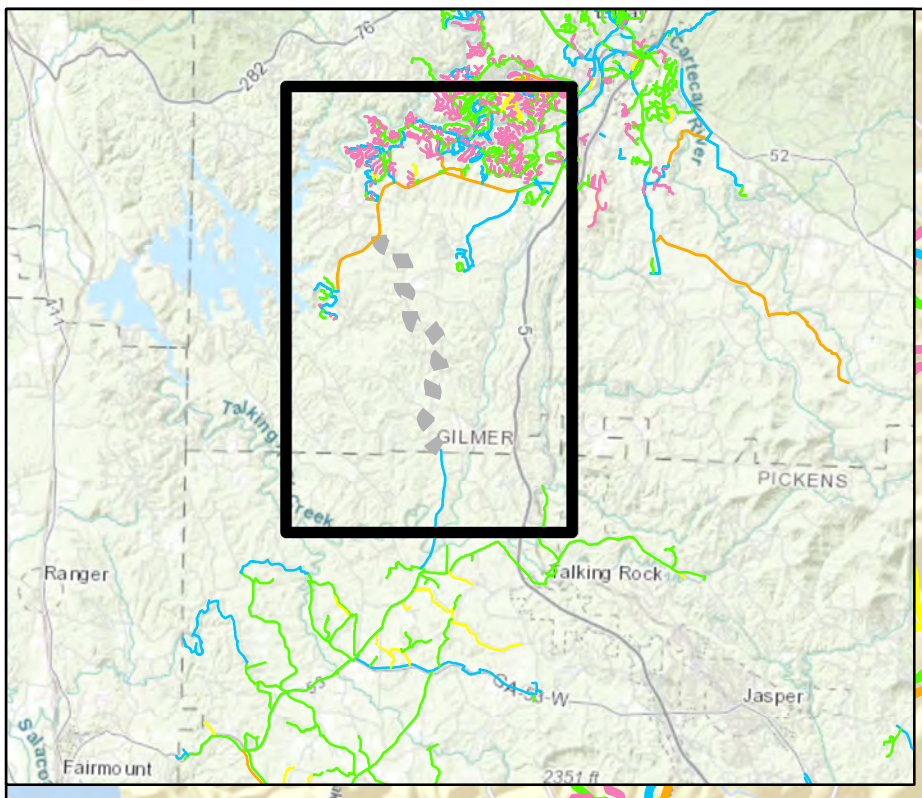
Demorest and White County Pipes
Diameter (in)
- 2
- 4
- 6
- 8
- 10
- 12
- Potential Interconnection

0 2,000 4,000 8,000 Feet

N

Demorest and White County Pipes		
Water Supply Redundancy Study		
Prepared by/Date: JCD 12/1/2021	wood.	**Figure Number: 6-6**
Checked by/Date: GJH 12/1/2021		
Project Number: 6123201339		

Document Path: G:\GEFA\MXD\Demorest and White County Pipes.mxd



Notes:
1. Data are sourced as shown in Table 2-2.
2. Data are meant for planning purposes only, and do not reflect survey-grade accuracy.
3. In many cases, the entire extent of a given distribution system is not shown due to lack of data.

Elijay-Gilmer County

Potential Interconnection

Pickens County

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors,

Ellijay-Gilmer County and Pickens County Pipes

Diameter (in)
- 2
- 4
- 6
- 8
- 10
- Potential Interconnection

Feet
0 2,000 4,000 8,000

N

Ellijay-Gilmer County and Pickens County Pipes

Water Supply Redundancy Study

Prepared by/Date: JCD 12/1/2021	Figure Number: 6-7
Checked by/Date: GJH 12/1/2021	
Project Number: 6123201339	

wood.

Document Path: G:\GEFA\MXD\Ellijay-Gilmer County and Pickens County Pipes.mxd

Appendix A: Excess Capacity Calculations

Contents

List of Tables

Acronyms

ADD	Average Daily Demand
EPD	Environmental Protection Division
GEFA	Georgia Environmental Finance Authority
GPM	Gallons Per Minute
MGD	Million Gallon(s) Per Day
QWS	Qualified Water System(s)
RWP	Regional Water Plan
USGS	U.S. Geological Survey

1.0 Introduction

This appendix describes and shows the peak day design capacity, average daily demand (ADD), and excess capacity index calculations.

2.0 Calculations

2.1 Peak Day Design Capacity

Peak day design capacity, defined as the maximum amount of water that can be pumped and treated within 24 hours, depends mostly on the water treatment plant configuration. For a groundwater-based qualified water system(s) (QWS), if water is treated at each well, then the peak day design value was calculated as the sum of each pump peak capacity (in gallons per minute [GPM] converted to million gallon(s) per day [MGD]). If water is treated at a single treatment plant after being pumped from multiple wells, then the peak day design value was calculated as the sum of each treatment plant's peak treatment capacity.

The 2050 peak day design capacity reflects current 2015 QWS peak day design capacity plus any capacity-expanding capital improvements identified by the QWS. For this water planning region, Chatsworth indicated two new treatment plants totalling 3.3 MGD, Chickamauga indicated installing a new 1.224 MGD well, Cleveland indicated installing two new wells totalling 0.432 MGD, Cornelia plans to increase their plant capacity by 0.5 MGD, Ellijay-Gilmer County indicated new treatment plants totalling 3.5 MGD, Hiawassee indicated expanding their plant by 1 MGD, LaFayette indicated adding two 1 MGD treatment plants, Pickens County indicated a new 0.33 MGD plant, Summerville indicated a new 1.14 MGD well, and Walker County indicated upgrading their plant by 7.5 MGD.

2.2 Average Daily Demand – Water Withdrawal Only

The 2015 ADD (water withdrawal only, not including purchased water) was obtained from the Environmental Protection Division (EPD)-validated 2015 water loss audit data by dividing "volume from own sources (million gallons per year)" by 365 days to convert values to MGD.

The 2050 ADD (water withdrawal or purchased water) for each QWS was estimated from each individual county's total municipal and industrial water demand projections. The region's *Water and Wastewater Forecasting Technical Memorandum* included 2050 population data and municipal water demand projections by county (CDM Smith, 2017). As defined by the Coosa-North Georgia Water Planning Council, the municipal sector includes public and private water withdrawal data for residential, commercial, and small industrial use. County municipal water demand values were allocated to each QWS based on the QWS' current total population served, obtained during the data collection stage. Table A-1 shows population forecasts and 2050 municipal demand by county. QWS 2050 municipal demand estimates are shown in Table A-2.

Because the 2015 ADD values include industrial water use, it is necessary to incorporate the 2050 regional industrial demand projections into the 2050 ADD estimates. The Regional Water Plan (RWP) provided a total regional projection for industrial water use rather than projections by county. However, the U.S. Geological Survey (USGS) report *Estimated Use of Water in Georgia for 2015 and Water-Use Trends, 1985–2015* showed 2015 county-level withdrawals and use by category, including industrial (Painter, 2019). It also reported withdrawals by major public suppliers, and 31 of 35 QWS were used. For these five QWS, 2015 total demand values from Table 4-1 are reported. This USGS report was used to calculate the

municipally supplied industrial use per county. The county industrial use was allocated to a QWS based on the QWS water use as a percent of the county water use. The 2015 QWS-supplied industrial demand value was then divided by the 2015 RWP regional industrial value (81.39 MGD) to obtain a QWS-specific percent. This percent was then applied to the 2050 RWP regional industrial projection (125.32 MGD) to obtain the 2050 QWS-supplied industrial demand (MGD). Table A-3 shows 2015 withdrawal and use data by county and the estimated 2050 municipally supplied industrial demand values for each QWS.

2.3 Excess Capacity Index

The QWS' capacities were scaled to allow for a comparison of excess capacities. The index was calculated for each QWS for 2015 and 2050 capacities using the following equation:

$$(1) \qquad Index = 1 - \frac{ADD}{Excess\ Capacity}$$

Where:

Excess Capacity = Peak Day Design Capacity - ADD

A comparison of indices provides insight into the magnitude of difference with respect to each QWS' excess capacity. The following index regimes exist, which depend upon the relationship between ADD and excess capacity. Excess capacity, in turn, depends on both ADD and peak day design capacity.

(a) If ADD is zero, the index is 1.
(b) If ADD is greater than zero and less than 50% of the peak day design capacity, the index is a positive value between 0 and 1.
    i. As ADD approaches 50% of the peak day design capacity, the index approaches zero.
    ii. The higher the index in this regime, the more excess capacity the QWS has relative to other QWS.
(c) If ADD is more than 50% but less than 100% of the peak day design capacity, the index is a negative value.
    i. As ADD approaches 100% of the peak day design capacity, the index approaches negative infinity.
    ii. In this regime, the closer the index is to zero, the more excess capacity the QWS has relative to other QWS.
(d) If ADD is more than peak day design capacity, excess capacity is negative. The index was not calculated for this regime because there is no excess capacity sufficiency.

Regime (a) above is not meaningful to this study because the ADD is not zero for the QWS in this region. Regime (b) is meaningful to the Coosa-North Georgia QWS because 18 QWS' 2015 ADD, and 10 QWS' 2050 ADD is less than 50% of their peak day design capacity. Regime (c) is also meaningful to the Upper Oconee QWS because 14 QWS' 2015 ADD and 15 QWS' 2050 ADD exceed 50% but remain below 100% of their peak day design capacity. Regime (d) Applies to eight QWS' 2050 ADD because their ADD exceeds their peak day design capacity.

Table A-4 shows the 2015 and 2050 peak day design capacity, ADD, resultant excess capacity, and calculated excess capacity index, as applicable, for each QWS. Baldwin, Catoosa Utility District Authority, Coosa Water Authority, Demorest, Floyd County, Hiawassee, Jasper, and Pickens County have no 2050 excess capacity sufficiency, as defined by Regime (d). The QWS with the lowest 2015 excess capacity

sufficiency, as defined by Regime (c), is Jasper. The next two QWS with the lowest 2015 excess capacity sufficiency, as defined by Regime (c), are Cleveland and McCaysville. The QWS with the lowest 2050 excess capacity sufficiency, as defined by Regime (c), is Clarkesville. The next five QWS with the lowest 2050 excess capacity sufficiency, as defined by Regime (c), are McCaysville, LaFayette, Ellijay-Gilmer County, White County, and Polk County.

References

CDM Smith, 2017. *Water and Wastewater Forecasting Technical Memorandum. Supplemental Material, Coosa North Georgia Regional Water Plan*. March 2017.

Painter, 2019. *Estimated Use of Water in Georgia for 2015 and Water-Use Trends, 1985–2015*. U.S. Geological Survey Open-File Report 2019–1086.

Table A-1
Population Forecasts and 2050 Municipal Demand by County

County	2015 Population Forecast[1]	2050 Population Forecast[1]	2050 Municipal Demand Forecast (MGD)[1]
Catoosa	66,522	83,210	8.3
Chattooga	25,171	22,941	3.3
Dade	16,542	15,393	1.8
Dawson	23,551	40,003	5.9
Fannin	23,926	22,952	2.5
Floyd	96,639	104,392	12.9
Gilmer	28,925	33,749	3.3
Gordon	56,865	69,290	9.0
Habersham	44,193	64,860	10.0
Lumpkin	31,701	44,201	5.0
Murray	39,554	36,739	3.5
Pickens	30,218	40,028	5.0
Polk	41,781	46,579	6.9
Towns	10,968	17,747	2.3
Union	21,854	25,377	2.8
Walker	68,730	69,562	9.4
White	28,246	35,839	3.9
Whitfield	104,496	119,343	26.2
Totals	**759,882**	**892,205**	**122**

Prepared by: LCT 08/26/21

Checked by: GJH 09/02/21

Notes:

MGD - million gallons per day

1. Values are from the 2017 CH2M *Coosa-North Georgia Water Planning Region Water and Wastewater Forecasting Technical Memorandum.*

Table A-2
2050 Municipal Demand Estimates

County	Qualified Water System (QWS)	Estimated Population Directly Served[1]	Estimated Consecutive Population Served[2]	Estimated Total Population	Serves Out-of-County Population	QWS Percent of County Population (%)[3]	QWS 2050 Municipal Demand Estimate (MGD)[4]
Habersham	Baldwin	3,900	12,600	16,500		37%	3.73
Union	Blairsville	2,600	0	2,600		12%	0.33
Fannin	Blue Ridge	7,500	500	8,000		33%	0.84
Gordon	Calhoun	49,000	13,700	62,700	◊	110%	9.92
Catoosa	Catoosa Utility District Authority	52,700	3,900	56,600	◊	85%	7.06
Floyd	Cave Spring	3,700	3,500	7,200	◊	7%	0.96
Polk	Cedartown	9,900	0	9,900		24%	1.63
Murray	Chatsworth	24,400	100	24,500	◊	62%	2.17
Chattooga	Chattooga County	8,800	0	8,800		35%	1.15
Walker	Chickamauga	5,100	0	5,100		7%	0.70
Habersham	Clarkesville	5,600	0	5,600		13%	1.27
White	Cleveland	4,100	0	4,100		15%	0.57
Union	Coosa Water Authority	5,300	0	5,300		24%	0.68
Habersham	Cornelia	6,800	500	7,300		17%	1.65
Dade	Dade County	18,700	0	18,700		113%	2.03
Lumpkin	Dahlonega	7,000	500	7,500		24%	1.18
Whitfield	Dalton	92,500	4,300	96,800	◊	93%	24.27
Habersham	Demorest	17,200	500	17,700		40%	4.01
Gilmer	Ellijay-Gilmer County	13,000	2,900	15,900		55%	1.81
Dawson	Etowah Water & Sewer Auth.	16,200	500	16,700	◊[5]	71%	4.18
Floyd	Floyd County	41,900	0	41,900		43%	5.59
Catoosa	Fort Oglethorpe	7,900	0	7,900		12%	0.99
Towns	Hiawassee	5,000	10,900	15,900		145%	3.33
Pickens	Jasper	11,800	1,800	13,600		45%	2.25
Walker	LaFayette	16,000	0	16,000		23%	2.19
Fannin	McCaysville	8,100	300	8,400	◊	35%	0.88
Union	Notla Water Authority	15,600	0	15,600		71%	2.00
Pickens	Pickens County	7,200	400	7,600	◊	25%	1.26
Polk	Polk County	24,100	500	24,600	◊	59%	4.06
Polk	Rockmart	3,400	0	3,400		8%	0.56
Floyd	Rome	48,100	200	48,300		50%	6.45
Chattooga	Summerville	9,600	0	9,600		38%	1.26

Table A-2
2050 Municipal Demand Estimates

County	Qualified Water System (QWS)	Estimated Population Directly Served[1]	Estimated Consecutive Population Served[2]	Estimated Total Population	Serves Out-of-County Population	QWS Percent of County Population (%)[3]	QWS 2050 Municipal Demand Estimate (MGD)[4]
Towns	Towns County	10,900	0	10,900		99%	2.29
Walker	Walker County	28,600	4,500	33,100		48%	4.53
White	White County	4,400	6,800	11,200		40%	1.55
	Totals	**596,600**	**68,900**	**665,500**	**-**	**-**	**109.33**

Prepared by: LCT 08/26/21

Checked by: GJH 09/02/21

Notes:

MGD - million gallons per day

QWS - qualified water system

1. The population that the system directly sells water to, rounded to the nearest 100.

2. The population benefited from the system's regular sales to another system, rounded to the nearest 100.

3. 2015 county populations presented in Table A-1 and QWS estimated total populations are used to calculate these QWS-specific values.

4. 2050 county municipal demand forecasts presented in Table A-1 and QWS percent of county population values are used to calculate these QWS-specific values.

5. Etowah Water & Sewer Authority's regular sales to Lumpkin County were terminated after 2019.

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Regional Water Plan - 2015 Regional Industrial Projection[1]	81.39 MGD
Regional Water Plan - 2050 Regional Industrial Projection[1]	125.32 MGD

Baldwin

Habersham County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.60	3.46	2.86
Commercial	0.00	0.58	0.58
Industrial	0.00	1.51	1.51
Water Loss	-	-	0.71
Inter-County Delivery	-	-	-0.12
		Total (MGD)	5.54
		Baldwin Public Supply (MGD)	1.92
		QWS's Percent of County's Public Supply (%)	35%
		QWS's Supplied Industrial Demand (MGD)	0.52
		2015 QWS Percent of Regional Industrial Demand (%)	0.64%
		2050 QWS Industrial Demand Estimate (MGD)	0.81

Blairsville

Union County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.02	1.09	1.07
Commercial	0.00	0.22	0.22
Industrial	0.00	0.18	0.18
Water Loss	-	-	0.35
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.82
		Blairsville Public Supply (MGD)	0.48
		QWS's Percent of County's Public Supply (%)	26%
		QWS's Supplied Industrial Demand (MGD)	0.05
		2015 QWS Percent of Regional Industrial Demand (%)	0.06%
		2050 QWS Industrial Demand Estimate (MGD)	0.07

Blue Ridge

Fannin County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.71	1.70	0.99
Commercial	0.00	0.36	0.36
Industrial	0.00	0.04	0.04
Water Loss	-	-	0.36
Inter-County Delivery	-	-	0.12
		Total (MGD)	1.87
		Blue Ridge (MGD)	0.87
		QWS's Percent of County's Public Supply (%)	47%
		QWS's Supplied Industrial Demand (MGD)	0.02
		2015 QWS Percent of Regional Industrial Demand (%)	0.02%
		2050 QWS Industrial Demand Estimate (MGD)	0.03

Calhoun

Gordon County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.54	4.48	3.94
Commercial	0.00	2.35	2.35
Industrial	0.00	1.74	1.74
Water Loss	-	-	2.40
Inter-County Delivery	-	-	0.87
		Total (MGD)	11.30
		Calhoun Public Supply (MGD)	10.43
		QWS's Percent of County's Public Supply (%)	92%
		QWS's Supplied Industrial Demand (MGD)	1.61
		2015 QWS Percent of Regional Industrial Demand (%)	1.97%
		2050 QWS Industrial Demand Estimate (MGD)	2.47

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Catoosa Utility District Authority

Catoosa County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.24	5.11	4.87
Commercial	0.00	0.45	0.45
Industrial	0.00	0.06	0.06
Water Loss	-	-	0.70
Inter-County Delivery	-	-	-1.91
		Total (MGD)	4.17
		Catoosa Utility District Authority Public Supply (MGD)	4.38
		QWS's Percent of County's Public Supply (%)	105%
		QWS's Supplied Industrial Demand (MGD)	0.06
		2015 QWS Percent of Regional Industrial Demand (%)	0.08%
		2050 QWS Industrial Demand Estimate (MGD)	0.10

Cave Spring

Floyd County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.38	6.61	6.23
Commercial	0.29	3.15	2.86
Industrial	23.00	24.07	1.07
Water Loss	-	-	1.64
Inter-County Delivery	-	-	-0.47
		Total (MGD)	11.33
		Cave Spring Public Supply (MGD)	0.87
		QWS's Percent of County's Public Supply (%)	8%
		QWS's Supplied Industrial Demand (MGD)	0.08
		2015 QWS Percent of Regional Industrial Demand (%)	0.10%
		2050 QWS Industrial Demand Estimate (MGD)	0.13

Cedartown

Polk County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.09	3.35	3.26
Commercial	0.00	0.52	0.52
Industrial	1.70	2.16	0.46
Water Loss	-	-	1.36
Inter-County Delivery	-	-	0.47
		Total (MGD)	6.07
		Cedartown Public Supply (MGD)	1.60
		QWS's Percent of County's Public Supply (%)	26%
		QWS's Supplied Industrial Demand (MGD)	0.12
		2015 QWS Percent of Regional Industrial Demand (%)	0.15%
		2050 QWS Industrial Demand Estimate (MGD)	0.19

Chatsworth

Murray County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.74	2.63	1.89
Commercial	0.00	0.28	0.28
Industrial	0.00	0.38	0.38
Water Loss	-	-	0.66
Inter-County Delivery	-	-	-0.98
		Total (MGD)	2.23
		Chatsworth Public Supply (MGD)	1.88
		QWS's Percent of County's Public Supply (%)	84%
		QWS's Supplied Industrial Demand (MGD)	0.32
		2015 QWS Percent of Regional Industrial Demand (%)	0.39%
		2050 QWS Industrial Demand Estimate (MGD)	0.49

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Chattooga County

Chattooga County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.09	1.50	1.41
Commercial	0.00	0.21	0.21
Industrial	5.60	5.83	0.23
Water Loss	-	-	0.95
Inter-County Delivery	-	-	0.41
		Total (MGD)	3.21
		Chattooga County Public Supply (MGD)[3]	0.81
		QWS's Percent of County's Public Supply (%)	25%
		QWS's Supplied Industrial Demand (MGD)	0.06
		2015 QWS Percent of Regional Industrial Demand (%)	0.07%
		2050 QWS Industrial Demand Estimate (MGD)	0.09

Chickamauga

Walker County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.49	5.32	4.83
Commercial	0.00	1.65	1.65
Industrial	0.63	1.04	0.41
Water Loss	-	-	0.27
Inter-County Delivery	-	-	-2.32
		Total (MGD)	4.84
		Chickamauga Public Supply (MGD)	0.77
		QWS's Percent of County's Public Supply (%)	16%
		QWS's Supplied Industrial Demand (MGD)	0.07
		2015 QWS Percent of Regional Industrial Demand (%)	0.08%
		2050 QWS Industrial Demand Estimate (MGD)	0.10

Clarkesville

Habersham County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.60	3.46	2.86
Commercial	0.00	0.58	0.58
Industrial	0.00	1.51	1.51
Water Loss	-	-	0.71
Inter-County Delivery	-	-	-0.12
		Total (MGD)	5.54
		Clarkesville Public Supply (MGD)	0.55
		QWS's Percent of County's Public Supply (%)	10%
		QWS's Supplied Industrial Demand (MGD)	0.15
		2015 QWS Percent of Regional Industrial Demand (%)	0.18%
		2050 QWS Industrial Demand Estimate (MGD)	0.23

Cleveland

White County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	1.05	1.86	0.81
Commercial	0.00	0.47	0.47
Industrial	0.00	0.03	0.03
Water Loss	-	-	0.16
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.47
		Cleveland Public Supply (MGD)	0.46
		QWS's Percent of County's Public Supply (%)	31%
		QWS's Supplied Industrial Demand (MGD)	0.01
		2015 QWS Percent of Regional Industrial Demand (%)	0.01%
		2050 QWS Industrial Demand Estimate (MGD)	0.01

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Coosa Water Authority

Union County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.02	1.09	1.07
Commercial	0.00	0.22	0.22
Industrial	0.00	0.18	0.18
Water Loss	-	-	0.35
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.82
		Coosa Water Authority Public Supply (MGD)[3]	0.31
		QWS's Percent of County's Public Supply (%)	17%
		QWS's Supplied Industrial Demand (MGD)	0.03
		2015 QWS Percent of Regional Industrial Demand (%)	0.04%
		2050 QWS Industrial Demand Estimate (MGD)	0.05

Cornelia

Habersham County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.60	3.46	2.86
Commercial	0.00	0.58	0.58
Industrial	0.00	1.51	1.51
Water Loss	-	-	0.71
Inter-County Delivery	-	-	-0.12
		Total (MGD)	5.54
		Cornelia Public Supply (MGD)	2.61
		QWS's Percent of County's Public Supply (%)	47%
		QWS's Supplied Industrial Demand (MGD)	0.71
		2015 QWS Percent of Regional Industrial Demand (%)	0.87%
		2050 QWS Industrial Demand Estimate (MGD)	1.10

Dade County

Dade County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.07	1.24	1.17
Commercial	0.00	0.51	0.51
Industrial	0.00	0.04	0.04
Water Loss	-	-	0.30
Inter-County Delivery	-	-	0.00
		Total (MGD)	2.02
		Dade County Public Supply (MGD)	2.02
		QWS's Percent of County's Public Supply (%)	100%
		QWS's Supplied Industrial Demand (MGD)	0.04
		2015 QWS Percent of Regional Industrial Demand (%)	0.05%
		2050 QWS Industrial Demand Estimate (MGD)	0.06

Dahlonega

Lumpkin County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	1.72	2.41	0.69
Commercial	0.00	0.27	0.27
Industrial	0.00	0.13	0.13
Water Loss	-	-	0.18
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.27
		Dahlonega Public Supply (MGD)	1.06
		QWS's Percent of County's Public Supply (%)	83%
		QWS's Supplied Industrial Demand (MGD)	0.11
		2015 QWS Percent of Regional Industrial Demand (%)	0.13%
		2050 QWS Industrial Demand Estimate (MGD)	0.17

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Dalton

Whitfield County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.37	8.64	8.27
Commercial	0.00	6.89	6.89
Industrial	0.11	9.20	9.09
Water Loss	-		0.29
Inter-County Delivery	-	-	-3.50
		Total (MGD)	21.04
		Dalton Public Supply (MGD)	23.96
		QWS's Percent of County's Public Supply (%)	114%
		QWS's Supplied Industrial Demand (MGD)	10.35
		2015 QWS Percent of Regional Industrial Demand (%)	12.72%
		2050 QWS Industrial Demand Estimate (MGD)	15.94

Demorest

Habersham County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.60	3.46	2.86
Commercial	0.00	0.58	0.58
Industrial	0.00	1.51	1.51
Water Loss	-	-	0.71
Inter-County Delivery	-	-	-0.12
		Total (MGD)	5.54
		Demorest Public Supply (MGD)	0.14
		QWS's Percent of County's Public Supply (%)	3%
		QWS's Supplied Industrial Demand (MGD)	0.04
		2015 QWS Percent of Regional Industrial Demand (%)	0.05%
		2050 QWS Industrial Demand Estimate (MGD)	0.06

Ellijay-Gilmer County

Gilmer County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	1.15	1.71	0.56
Commercial	0.00	0.40	0.40
Industrial	2.48	3.79	1.31
Water Loss	-	-	0.23
Inter-County Delivery	-	-	-0.19
		Total (MGD)	2.31
		Ellijay-Gilmer County Public Supply (MGD)	2.46
		QWS's Percent of County's Public Supply (%)	106%
		QWS's Supplied Industrial Demand (MGD)	1.40
		2015 QWS Percent of Regional Industrial Demand (%)	1.71%
		2050 QWS Industrial Demand Estimate (MGD)	2.15

Etowah Water and Sewer Authority

Dawson County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.50	1.52	1.02
Commercial	0.00	0.26	0.26
Industrial	0.00	0.02	0.02
Water Loss	-	-	0.21
Inter-County Delivery	-	-	-0.11
		Total (MGD)	1.40
		Etowah Water and Sewer Authority Public Supply (MGD)	1.29
		QWS's Percent of County's Public Supply (%)	92%
		QWS's Supplied Industrial Demand (MGD)	0.02
		2015 QWS Percent of Regional Industrial Demand (%)	0.02%
		2050 QWS Industrial Demand Estimate (MGD)	0.03

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Floyd County

Floyd County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.38	6.61	6.23
Commercial	0.29	3.15	2.86
Industrial	23.00	24.07	1.07
Water Loss	-	-	1.64
Inter-County Delivery	-	-	-0.47
		Total (MGD)	11.33
		Floyd County Public Supply (MGD)	3.44
		QWS's Percent of County's Public Supply (%)	30%
		QWS's Supplied Industrial Demand (MGD)	0.32
		2015 QWS Percent of Regional Industrial Demand (%)	0.40%
		2050 QWS Industrial Demand Estimate (MGD)	0.50

Fort Oglethorpe

Catoosa County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.24	5.11	4.87
Commercial	0.00	0.45	0.45
Industrial	0.00	0.06	0.06
Water Loss	-	-	0.70
Inter-County Delivery	-	-	-1.91
		Total (MGD)	4.17
		Fort Oglethorpe Public Supply (MGD)[3]	0.92
		QWS's Percent of County's Public Supply (%)	22%
		QWS's Supplied Industrial Demand (MGD)	0.01
		2015 QWS Percent of Regional Industrial Demand (%)	0.02%
		2050 QWS Industrial Demand Estimate (MGD)	0.02

Hiawassee

Towns County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.07	1.19	1.12
Commercial	0.00	0.16	0.16
Industrial	0.00	0.01	0.01
Water Loss	-	-	0.25
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.54
		Hiawassee Public Supply (MGD)	1.34
		QWS's Percent of County's Public Supply (%)	87%
		QWS's Supplied Industrial Demand (MGD)	0.01
		2015 QWS Percent of Regional Industrial Demand (%)	0.01%
		2050 QWS Industrial Demand Estimate (MGD)	0.01

Jasper

Pickens County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.36	2.73	2.37
Commercial	0.00	0.34	0.34
Industrial	1.12	1.21	0.09
Water Loss	-	-	0.03
Inter-County Delivery	-	-	-0.55
		Total (MGD)	2.28
		Jasper Public Supply (MGD)	1.89
		QWS's Percent of County's Public Supply (%)	83%
		QWS's Supplied Industrial Demand (MGD)	0.07
		2015 QWS Percent of Regional Industrial Demand (%)	0.09%
		2050 QWS Industrial Demand Estimate (MGD)	0.11

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

LaFayette

Walker County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.49	5.32	4.83
Commercial	0.00	1.65	1.65
Industrial	0.63	1.04	0.41
Water Loss	-	-	0.27
Inter-County Delivery	-	-	-2.32
		Total (MGD)	4.84
		Lafayette Public Supply (MGD)	1.92
		QWS's Percent of County's Public Supply (%)	40%
		QWS's Supplied Industrial Demand (MGD)	0.16
		2015 QWS Percent of Regional Industrial Demand (%)	0.20%
		2050 QWS Industrial Demand Estimate (MGD)	0.25

McCaysville

Fannin County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.71	1.70	0.99
Commercial	0.00	0.36	0.36
Industrial	0.00	0.04	0.04
Water Loss	-	-	0.36
Inter-County Delivery	-	-	0.12
		Total (MGD)	1.87
		McCaysville Public Supply (MGD)	0.79
		QWS's Percent of County's Public Supply (%)	42%
		QWS's Supplied Industrial Demand (MGD)	0.02
		2015 QWS Percent of Regional Industrial Demand (%)	0.02%
		2050 QWS Industrial Demand Estimate (MGD)	0.03

Notla Water Authority

Union County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.02	1.09	1.07
Commercial	0.00	0.22	0.22
Industrial	0.00	0.18	0.18
Water Loss	-	-	0.35
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.82
		Notla Water Authority Public Supply (MGD)	0.91
		QWS's Percent of County's Public Supply (%)	50%
		QWS's Supplied Industrial Demand (MGD)	0.09
		2015 QWS Percent of Regional Industrial Demand (%)	0.11%
		2050 QWS Industrial Demand Estimate (MGD)	0.14

Pickens County

Pickens County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.36	2.73	2.37
Commercial	0.00	0.34	0.34
Industrial	1.12	1.21	0.09
Water Loss	-	-	0.03
Inter-County Delivery	-	-	-0.55
		Total (MGD)	2.28
		Pickens County Public Supply (MGD)[3]	0.56
		QWS's Percent of County's Public Supply (%)	25%
		QWS's Supplied Industrial Demand (MGD)	0.02
		2015 QWS Percent of Regional Industrial Demand (%)	0.03%
		2050 QWS Industrial Demand Estimate (MGD)	0.03

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Polk County

Polk County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.09	3.35	3.26
Commercial	0.00	0.52	0.52
Industrial	1.70	2.16	0.46
Water Loss	-	-	1.36
Inter-County Delivery	-	-	0.47
		Total (MGD)	6.07
		Polk County Public Supply (MGD)	2.45
		QWS's Percent of County's Public Supply (%)	40%
		QWS's Supplied Industrial Demand (MGD)	0.19
		2015 QWS Percent of Regional Industrial Demand (%)	0.23%
		2050 QWS Industrial Demand Estimate (MGD)	0.29

Rockmart

Polk County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.09	3.35	3.26
Commercial	0.00	0.52	0.52
Industrial	1.70	2.16	0.46
Water Loss	-	-	1.36
Inter-County Delivery	-	-	0.47
		Total (MGD)	6.07
		Rockmart Public Supply (MGD)	1.55
		QWS's Percent of County's Public Supply (%)	26%
		QWS's Supplied Industrial Demand (MGD)	0.12
		2015 QWS Percent of Regional Industrial Demand (%)	0.14%
		2050 QWS Industrial Demand Estimate (MGD)	0.18

Rome

Floyd County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.38	6.61	6.23
Commercial	0.29	3.15	2.86
Industrial	23.00	24.07	1.07
Water Loss	-	-	1.64
Inter-County Delivery	-	-	-0.47
		Total (MGD)	11.33
		Rome Public Supply (MGD)	7.13
		QWS's Percent of County's Public Supply (%)	63%
		QWS's Supplied Industrial Demand (MGD)	0.67
		2015 QWS Percent of Regional Industrial Demand (%)	0.83%
		2050 QWS Industrial Demand Estimate (MGD)	1.04

Summerville

Chattooga County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.09	1.50	1.41
Commercial	0.00	0.21	0.21
Industrial	5.60	5.83	0.23
Water Loss	-	-	0.95
Inter-County Delivery	-	-	0.41
		Total (MGD)	3.21
		Summerville Public Supply (MGD)	1.81
		QWS's Percent of County's Public Supply (%)	56%
		QWS's Supplied Industrial Demand (MGD)	0.13
		2015 QWS Percent of Regional Industrial Demand (%)	0.16%
		2050 QWS Industrial Demand Estimate (MGD)	0.20

Table A-3

2015 Withdrawal and Use Data by County and 2050 Industrial Demand Estimates

Towns County

Towns County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.07	1.19	1.12
Commercial	0.00	0.16	0.16
Industrial	0.00	0.01	0.01
Water Loss	-	-	0.25
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.54
		Towns County Public Supply (MGD)[3]	0.62
		QWS's Percent of County's Public Supply (%)	40%
		QWS's Supplied Industrial Demand (MGD)	0.00
		2015 QWS Percent of Regional Industrial Demand (%)	0.00%
		2050 QWS Industrial Demand Estimate (MGD)	0.01

Walker County

Walker County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	0.49	5.32	4.83
Commercial	0.00	1.65	1.65
Industrial	0.63	1.04	0.41
Water Loss	-	-	0.27
Inter-County Delivery	-	-	-2.32
		Total (MGD)	4.84
		Walker County Public Supply (MGD)	3.60
		QWS's Percent of County's Public Supply (%)	74%
		QWS's Supplied Industrial Demand (MGD)	0.30
		2015 QWS Percent of Regional Industrial Demand (%)	0.37%
		2050 QWS Industrial Demand Estimate (MGD)	0.47

White County

White County[2]	2015 Total Withdrawal (MGD)	2015 Total Use (MGD)	2015 Total Publicly Supplied (MGD)
Domestic	1.05	1.86	0.81
Commercial	0.00	0.47	0.47
Industrial	0.00	0.03	0.03
Water Loss	-	-	0.16
Inter-County Delivery	-	-	0.00
		Total (MGD)	1.47
		White County Public Supply (MGD)	0.62
		QWS's Percent of County's Public Supply (%)	42%
		QWS's Supplied Industrial Demand (MGD)	0.01
		2015 QWS Percent of Regional Industrial Demand (%)	0.02%
		2050 QWS Industrial Demand Estimate (MGD)	0.02

Prepared by: LCT 08/26/21

Checked by: GJH 09/03/21

MGD - million gallons per day

QWS - qualified water system

1. Values are from the 2017 CDM Smith *Water and Wastewater Forecasting Technical Memorandum. Supplemental Material, Upper Oconee Regional Water Plan.*
2. Values in the box with thick borders are from Painter, 2019: *Estimated Use of Water in Georgia for 2015 and Water-Use Trends, 1985–2015.*
3. Values do not appear or they appear anomalous in the 2019 Painter report; rather, 2015 Total Demand values from Table 4-1 are reported.

Table A-4
Excess Capacity Index Values

County	Qualified Water System (QWS)	2015 Peak Day Design Capacity (MGD)	2015 ADD (MGD) (Water Withdrawal Only)[1]	2015 Excess Capacity (MGD)	2015 Excess Capacity Index	2050 Peak Day Design Capacity (MGD)[2]	2050 ADD (MGD) (Water Withdrawal Only)[3]	2050 Excess Capacity (MGD)	2050 Excess Capacity Index
Habersham	Baldwin	4.0	1.9	2.1	0.11	4.0	4.5	-0.5	-
Union	Blairsville	1.8	0.5	1.2	0.59	1.8	0.4	1.2	0.67
Fannin	Blue Ridge	1.5	0.8	0.7	-0.05	1.5	0.9	0.6	-0.36
Gordon	Calhoun	30.8	9.8	21.0	0.54	30.8	12.4	18.4	0.33
Catoosa	Catoosa Utility District Authority	7.0	4.3	2.7	-0.56	7.0	7.2	-0.2	-
Floyd	Cave Spring	1.5	0.8	0.7	-0.18	1.5	1.1	0.4	-1.64
Polk	Cedartown	3.0	1.6	1.4	-0.12	3.0	1.8	1.2	-0.55
Murray	Chatsworth	4.2	1.7	2.5	0.31	7.5	2.7	4.8	0.45
Chattooga	Chattooga County	2.7	0.8	1.9	0.58	2.7	1.2	1.5	0.17
Walker	Chickamauga	1.8	0.8	1.0	0.24	3.0	0.8	2.2	0.64
Habersham	Clarkesville	1.5	0.5	1.0	0.43	1.5	1.5	0.002	-745.04
White	Cleveland	0.6	0.5	0.2	-1.99	1.1	0.6	0.5	-0.23
Union	Coosa Water Authority	0.6	0.3	0.3	-0.11	0.6	0.7	-0.1	-
Habersham	Cornelia	4.0	2.3	1.7	-0.41	4.5	2.7	1.3	-1.19
Dade	Dade County	3.8	1.8	2.0	0.13	3.8	2.1	1.7	-0.23
Lumpkin	Dahlonega	6.0	1.0	5.0	0.81	6.0	1.3	4.7	0.71
Whitfield	Dalton	65.5	24.2	41.3	0.41	65.5	40.2	25.3	-0.59
Habersham	Demorest	1.8	0.1	1.6	0.91	1.8	4.1	-2.3	-
Gilmer	Ellijay-Gilmer County	4.5	2.6	1.9	-0.35	8.0	4.0	0.6	-5.74
Dawson	Etowah Water & Sewer Auth.	5.5	1.4	4.1	0.66	5.5	4.2	1.3	-2.27
Floyd	Floyd County	5.7	3.4	2.2	-0.53	5.7	6.1	-0.4	-
Catoosa	Fort Oglethorpe	NA	NA	NA	-	NA	NA	NA	-
Towns	Hiawassee	2.0	1.2	0.8	-0.44	3.0	3.3	-0.3	-
Pickens	Jasper	3.4	1.8	0.5	-2.51	3.4	2.4	-0.04	-
Walker	LaFayette	2.8	1.9	0.9	-1.06	4.8	2.4	0.3	-6.83
Fannin	McCaysville	1.3	0.7	0.3	-1.78	1.3	0.9	0.1	-8.39
Union	Notla Water Authority	2.9	0.8	2.0	0.58	2.9	2.1	0.7	-2.23
Pickens	Pickens County	NA	NA	NA	-	0.3	1.3	-1.0	-
Polk	Polk County	5.7	2.4	3.2	0.23	5.7	4.3	1.3	-2.47
Polk	Rockmart	3.6	1.5	2.1	0.30	3.6	0.7	2.9	0.74

Table A-4
Excess Capacity Index Values

County	Qualified Water System (QWS)	2015 Peak Day Design Capacity (MGD)	2015 ADD (MGD) (Water Withdrawal Only)[1]	2015 Excess Capacity (MGD)	2015 Excess Capacity Index	2050 Peak Day Design Capacity (MGD)[2]	2050 ADD (MGD) (Water Withdrawal Only)[3]	2050 Excess Capacity (MGD)	2050 Excess Capacity Index
Floyd	Rome	18.0	6.6	11.4	0.42	18.0	7.5	10.5	0.29
Chattooga	Summerville	3.4	1.8	1.6	-0.09	4.5	1.5	2.3	0.36
Towns	Towns County	NA	NA	NA	-	NA	NA	NA	-
Walker	Walker County	8.3	3.6	4.7	0.22	15.8	5.0	7.8	0.36
White	White County	2.0	0.6	1.4	0.54	2.0	1.6	0.4	-2.61
	Totals	**211.2**	**84.0**	**125.4**	**-**	**232.1**	**133.6**	**87.0**	**-**

Prepared by: LCT 08/27/21
Checked by: GJH 09/07/21

Notes:
ADD - average daily demand
MGD - million gallons per day
1. 2015 EPD-validated water loss audit values are reported. In the event a QWS is not in that dataset, as identified in Table 2-3, QWS-provided values are reported, as available.
2. Chatsworth indicated two new WTPs totalling 3.3 MGD. Chickamauga indicated installing a new well (1.224 MGD). Cleveland indicated installing two wells (0.432 MGD). Cornelia plans to increase plant capacity by 0.5 MGD. Ellijay-Gilmer County indicated new WTPs totalling 3.5 MGD. Hiawassee indicated expanding the plant by 1 MGD. LaFayette indicated adding two 1 MGD WTPs. Pickens County indicated a new 0.33 MGD plant. Summerville indicated a new 1.14 MGD well. Walker County indicated upgrading the surface water plant by 7.5 MGD.
3. Municipal and publicly-supplied industrial demand by county were allocated to each QWS.

Appendix B: Water Supply Deficit Calcuations

Table B-1a
Baldwin Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Baldwin WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Chattahoochee River	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.00	4.00	0.63	0.36	4.99	0.00	4.99
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.00	4.00	0.63	NA	4.63	0.00	4.63
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.00	4.00	0.63	0.36	4.99	4.00	0.99
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	4.00	4.00	0.63	NA	4.63	0.00	4.63
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	4.00	4.00	0.63	0.96	5.59	4.00	1.59
	D2. Chemical contamination of largest raw water source	0.1	1	4.00	4.00	0.63	0.96	5.59	4.00	1.59
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	4.00	4.00	0.63	NA	1.39	NA	1.39

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Baldwin WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. Baldwin WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Chattahoochee River is Strahler Stream Order 5 at the withdrawal point (not a major river). Purchased water is available because their supplier does not suffer from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-1b
Baldwin Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	4.99	1.90	1.23	0.66	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.63	1.90	1.23	0.66	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.99	1.90	1.23	0.66	0.90	0.24	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.63	1.90	1.23	0.66	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.59	1.90	1.23	0.66	0.30	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.59	1.90	1.23	0.66	0.30	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	1.39	1.90	1.23	0.66	0.50	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-1c
Baldwin Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Baldwin WTP**	**Chattahoochee River**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[4]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.00	4.00	0.63	0.66	5.29	0.00	5.29
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.00	4.00	0.63	NA	4.63	0.00	4.63
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)[5]	0.1	1	4.00	4.00	0.63	0.66	5.29	2.87	2.42
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	4.00	4.00	0.63	NA	4.63	0.00	4.63
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	4.00	4.00	0.63	1.26	5.89	4.00	1.89
	D2. Chemical contamination of largest raw water source	0.1	1	4.00	4.00	0.63	1.26	5.89	4.00	1.89
E. Full unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]					Not Applicable				
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	4.00	4.00	0.63	NA	2.45	NA	2.45

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

1. Baldwin WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. Baldwin WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. Baldwin plans to install an additional 0.5 MG tank.
5. A redundant 8-inch diameter line is being constructed (expected by year-end 2021) from the WTP to the distribution system, rendering partial capacity loss.
5. The QWS does not have a dammed river impoundment.
6. The Chattahoochee River is Strahler Stream Order 5 at the withdrawal point (not a major river). Purchased water is available because their supplier does not suffer from Risk H.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-1d
Baldwin Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	5.29	4.54	2.95	1.59	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.63	4.54	2.95	1.59	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	2.42	4.54	2.95	1.59	2.12	0.53	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.63	4.54	2.95	1.59	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.89	4.54	2.95	1.59	2.64	1.06	0.00
	D2. Chemical contamination of largest raw water source	1.89	4.54	2.95	1.59	2.64	1.06	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	2.45	4.54	2.95	1.59	2.09	0.50	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-1e
Baldwin Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
1	GA1370003 - Cornelia	Willingham Ave. and Baldwin City Limit	6	5	0.982	0.635	0.015	0.635	1.7	1.3

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-2a
Blairsville Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)					Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Miller Head Well WTP	Head Well WTP	Jr. High School Well WTP	Exp. Station Well WTP	Blairsville WTP	Nottley River					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	0.24	2.89
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.07	0.17	0.07	0.29	1.20	1.23	0.63	NA	2.44	0.00	2.44
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	1.20	1.93
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	0.07	0.17	0.07	0.29	1.20	1.23	0.63	NA	2.44	0.00	2.44
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	1.20	1.93
	D2. Chemical contamination of largest raw water source	0.1	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	1.20	1.93
E. Full unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]								Not Applicable					
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	0.07	0.17	0.07	0.29	1.20	1.23	0.63	NA	0.82	NA	0.82

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Blairsville WTP has a backup generator of unknown treatment capacity. Therefore, 80% treatment capacity was assumed.
2. Blairsville WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Nottley River is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is available because their supplier does not suffer from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-2b
Blairsville Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	2.89	0.47	0.31	0.17	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	2.44	0.47	0.31	0.17	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.93	0.47	0.31	0.17	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.44	0.47	0.31	0.17	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.93	0.47	0.31	0.17	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.93	0.47	0.31	0.17	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.82	0.47	0.31	0.17	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-2c
Blairsville Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)					Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Miller Head Well WTP	Head Well WTP	Jr. High School Well WTP	Exp. Station Well WTP	Blairsville WTP	Nottley River					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	0.24	2.89
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.07	0.17	0.07	0.29	1.20	1.23	0.63	NA	2.44	0.00	2.44
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	1.20	1.93
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	0.07	0.17	0.07	0.29	1.20	1.23	0.63	NA	2.44	0.00	2.44
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	1.20	1.93
	D2. Chemical contamination of largest raw water source	0.1	1	0.07	0.17	0.07	0.29	1.20	1.23	0.63	0.69	3.13	1.20	1.93
E. Full unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]								Not Applicable					
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	0.07	0.17	0.07	0.29	1.20	1.23	0.63	NA	0.80	NA	0.80

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Blairsville WTP has a backup generator of unknown treatment capacity. Therefore, 80% treatment capacity was assumed.
2. Blairsville WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Nottley River is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is available because their supplier does not suffer from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-2d
Blairsville Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	2.89	0.41	0.26	0.14	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	2.44	0.41	0.26	0.14	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.93	0.41	0.26	0.14	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.44	0.41	0.26	0.14	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.93	0.41	0.26	0.14	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.93	0.41	0.26	0.14	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.80	0.41	0.26	0.14	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-2e
Blairsville Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
2	GA2910003 - Notla Water Authority	Unknown	6	5	0.982	0.635	0.000	0.635	1.969	0.663

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-3a
Blue Ridge Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Blue Ridge WTP	Toccoa River					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.5	1.5	0.26	1.50	3.26	0.00	3.26
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.5	1.5	0.26	NA	1.76	0.00	1.76
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.5	1.5	0.26	1.50	3.26	1.50	1.76
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.5	1.5	0.26	NA	1.76	0.00	1.76
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.5	1.5	0.26	3.00	4.76	1.50	3.26
	D2. Chemical contamination of largest raw water source	0.1	1	1.5	1.5	0.26	3.00	4.76	1.50	3.26
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	1.5	1.5	NA	NA	0.31	NA	0.31

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Blue Ridge WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Blue Ridge WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Toccoa River is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is not available because their supplier suffers from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-3b
Blue Ridge Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.26	0.77	0.50	0.27	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	1.76	0.77	0.50	0.27	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.76	0.77	0.50	0.27	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.76	0.77	0.50	0.27	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.26	0.77	0.50	0.27	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.26	0.77	0.50	0.27	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.31	0.77	0.50	0.27	0.46	0.19	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-3c
Blue Ridge Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Blue Ridge WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Toccoa River	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.5	1.5	0.10	1.50	3.10	0.00	3.10
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.5	1.5	0.10	NA	1.60	0.00	1.60
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.5	1.5	0.10	1.50	3.10	1.50	1.60
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.5	1.5	0.10	NA	1.60	0.00	1.60
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.5	1.5	0.10	3.00	4.59	1.50	3.09
	D2. Chemical contamination of largest raw water source	0.1	1	1.5	1.5	0.10	3.00	4.59	1.50	3.09
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	1.5	1.5	NA	NA	0.35	NA	0.35

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Blue Ridge WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Blue Ridge WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Toccoa River is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is not available because their supplier suffers from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-3d
Blue Ridge Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.10	0.86	0.56	0.30	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	1.60	0.86	0.56	0.30	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.60	0.86	0.56	0.30	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.60	0.86	0.56	0.30	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.09	0.86	0.56	0.30	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.09	0.86	0.56	0.30	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.35	0.86	0.56	0.30	0.52	0.22	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-3e
Blue Ridge Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3]	
									2015	2050
3	GA1110001 - McCaysville	Hwy 5 and Old Hwy 5 intersection	6	5	0.982	0.635	0.000	0.635	0.264	0.096

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-4a
Calhoun Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Peak Permitted Withdrawal (MGD-24-hour maximum)[3]			Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Mauldin Road WTP	WTP: Big Spring and Wells #3 & #4	Oostanaula River	Coosawattee River	Big Spring					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	19.00	11.80	6.20	18.00	7.00	2.20	15.96	48.96	0.00	48.96
	A2. Critical asset failure at largest WTP[2]	0.1	30	19.00	11.80	6.20	18.00	7.00	2.20	NA	33.00	0.00	33.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	19.00	11.80	6.20	18.00	7.00	2.20	15.96	48.96	19.00	29.96
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	19.00	11.80	6.20	18.00	7.00	2.20	NA	33.00	0.00	33.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	19.00	11.80	6.20	18.00	7.00	2.20	17.61	50.61	12.80	37.81
	D2. Chemical contamination of largest raw water source	0.1	1	19.00	11.80	6.20	18.00	7.00	2.20	17.61	50.61	12.80	37.81
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable											
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable											
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable											
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	Not Applicable											

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Mauldin Road WTP has backup generators able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Mauldin Road WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Coosawattee River is Strahler Stream Order 6 at the withdrawal point (a major river).

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-4b
Calhoun Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	48.96	9.75	6.34	3.41	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	33.00	9.75	6.34	3.41	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	29.96	9.75	6.34	3.41	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	33.00	9.75	6.34	3.41	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	37.81	9.75	6.34	3.41	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	37.81	9.75	6.34	3.41	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-4c
Calhoun Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Peak Permitted Withdrawal (MGD-24-hour maximum)[3]			Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Mauldin Road WTP	Brittany Drive WTP	Oostanaula River	Coosawattee River	Big Spring					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	19.00	11.80	6.20	18.00	7.00	2.06	17.16	50.02	0.00	50.02
	A2. Critical asset failure at largest WTP[2]	0.1	30	19.00	11.80	6.20	18.00	7.00	2.06	NA	32.86	0.00	32.86
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	19.00	11.80	6.20	18.00	7.00	2.06	17.16	50.02	19.00	31.02
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	19.00	11.80	6.20	18.00	7.00	2.06	NA	32.86	0.00	32.86
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	19.00	11.80	6.20	18.00	7.00	2.06	18.81	51.67	12.80	38.87
	D2. Chemical contamination of largest raw water source	0.1	1	19.00	11.80	6.20	18.00	7.00	2.06	18.81	51.67	12.80	38.87
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable											
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable											
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable											
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	Not Applicable											

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Mauldin Road WTP has backup generators able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Mauldin Road WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. The QWS plans to add a 2 MG tank.
5. The QWS does not have a dammed river impoundment.
6. The Coosawattee River is Strahler Stream Order 6 at the withdrawal point (a major river).

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-4d
Calhoun Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	50.02	12.40	8.06	4.34	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	32.86	12.40	8.06	4.34	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	31.02	12.40	8.06	4.34	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	32.86	12.40	8.06	4.34	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	38.87	12.40	8.06	4.34	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	38.87	12.40	8.06	4.34	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-4e
Calhoun Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3]	
									2015	2050
4	GA0150000 - Adairsville[4]	Hwy 41	12	5	3.927	2.538	0.000	2.500	1.6	1.5
5	GA3130000-Dalton	Hwy 41	6	5	0.982	0.635	0.000	0.600	41.287	25.291

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen. Braselton's values were taken from their Water Conservation Plan
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. The excess capacity is estimated utilizing the current (4 MGD) and projected (6 MGD) peak day design capacities as well as the current (2.4 MGD) and projected (4.5 MGD) ADD found within the 2017 Ch2M and Black and Veatch *Water Resource Management Plan: Metropolitan North Georgia Water Planning District.*

Table B-5a
Catoosa Utility District Authority Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Yates Spring WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Yates Spring	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	7.00	7.00	8.47	13.59	29.06	0.00	29.06
	A2. Critical asset failure at largest WTP[2]	0.1	30	7.00	7.00	8.47	NA	15.47	0.00	15.47
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	7.00	7.00	8.47	13.59	29.06	7.00	22.06
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	7.00	7.00	8.47	NA	15.47	0.00	15.47
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	7.00	7.00	8.47	13.59	29.06	7.00	22.06
	D2. Chemical contamination of largest raw water source	0.1	1	7.00	7.00	8.47	13.59	29.06	7.00	22.06
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-5b
Catoosa Utility District Authority Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	29.06	4.53	2.95	1.59	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	15.47	4.53	2.95	1.59	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	22.06	4.53	2.95	1.59	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	15.47	4.53	2.95	1.59	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	22.06	4.53	2.95	1.59	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	22.06	4.53	2.95	1.59	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-5c
Catoosa Utility District Authority Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Yates Spring WTP**	**Yates Spring**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[4]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	7.00	7.00	8.47	13.59	29.06	0.00	29.06
	A2. Critical asset failure at largest WTP[2]	0.1	30	7.00	7.00	8.47	NA	15.47	0.00	15.47
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	7.00	7.00	8.47	13.59	29.06	7.00	22.06
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	7.00	7.00	8.47	NA	15.47	0.00	15.47
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	7.00	7.00	8.47	13.59	29.06	7.00	22.06
	D2. Chemical contamination of largest raw water source	0.1	1	7.00	7.00	8.47	13.59	29.06	7.00	22.06
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-5d
Catoosa Utility District Authority Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	29.06	7.16	4.65	2.51	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	15.47	7.16	4.65	2.51	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	22.06	7.16	4.65	2.51	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	15.47	7.16	4.65	2.51	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	22.06	7.16	4.65	2.51	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	22.06	7.16	4.65	2.51	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-5e
Catoosa Utility District Authority Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3]	
									2015	2050
6	TN0000219-Eastside Utility District	Windstone Subdivision	24	3	9.425	6.091	0.115	6.091	unknown	unknown
7	TN0000219-Eastside Utility District	Cherokee Valley Road	12	5	3.927	2.538	0.115	0.875		
8	TN0000107-Tennessee American Water Company	Scruggs Road	12	5	3.927	2.538	0.042	1.500	unknown	unknown

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-6a
Cave Spring Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Cave Spring WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Cave Spring	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.50	1.50	3.37	1.25	6.12	1.50	4.62
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.50	1.50	3.37	NA	4.87	0.00	4.87
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.50	1.50	3.37	1.25	6.12	1.50	4.62
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.50	1.50	3.37	NA	4.87	0.00	4.87
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.50	1.50	3.37	1.25	6.12	1.50	4.62
	D2. Chemical contamination of largest raw water source	0.1	1	1.50	1.50	3.37	1.25	6.12	1.50	4.62
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering partial capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-6b
Cave Spring Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	4.62	0.81	0.53	0.28	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.87	0.81	0.53	0.28	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	4.62	0.81	0.53	0.28	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.87	0.81	0.53	0.28	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	4.62	0.81	0.53	0.28	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	4.62	0.81	0.53	0.28	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-6c
Cave Spring Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Cave Spring WTP**	**Cave Spring**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[4]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.50	1.50	1.13	1.25	3.88	1.50	2.38
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.50	1.50	1.13	NA	2.63	0.00	2.63
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.50	1.50	1.13	1.25	3.88	1.50	2.38
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.50	1.50	1.13	NA	2.63	0.00	2.63
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.50	1.50	1.13	1.25	3.88	1.50	2.38
	D2. Chemical contamination of largest raw water source	0.1	1	1.50	1.50	1.13	1.25	3.88	1.50	2.38
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering partial capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-6d
Cave Spring Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	2.38	1.09	0.71	0.38	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	2.63	1.09	0.71	0.38	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	2.38	1.09	0.71	0.38	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.63	1.09	0.71	0.38	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	2.38	1.09	0.71	0.38	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	2.38	1.09	0.71	0.38	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-6e
Cave Spring Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
9	GA1150001-Floyd County	Craven Street	16	3	4.189	2.707	0.000	2.707	2.239	-0.438
10	GA2330001-Polk County	Old Cave Spring Road	8	5	1.745	1.128	0.000	1.128	3.169	1.252

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. Jackson County is a wholesale purchase system which utilizes Barrow County, Commerce, and the Upper Oconee Basin Water Authority as water sources.
The cumulative excess capacity for the systems is listed here, while Table B-9e has individual values. Jackson County would act as a passthrough system.

Table B-7a
Cedartown Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Cedartown WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Big Spring	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	3.00	3.00	1.13	2.21	6.34	3.00	3.34
	A2. Critical asset failure at largest WTP[2]	0.1	30	3.00	3.00	1.13	NA	4.13	0.00	4.13
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	3.00	3.00	1.13	2.21	6.34	3.00	3.34
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	3.00	3.00	1.13	NA	4.13	0.00	4.13
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	3.00	3.00	1.13	2.29	6.42	3.00	3.42
	D2. Chemical contamination of largest raw water source	0.1	1	3.00	3.00	1.13	2.29	6.42	3.00	3.42
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering full capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-7b
Cedartown Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.34	1.59	1.03	0.56	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.13	1.59	1.03	0.56	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.34	1.59	1.03	0.56	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.13	1.59	1.03	0.56	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.42	1.59	1.03	0.56	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.42	1.59	1.03	0.56	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-7c
Cedartown Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Cedartown WTP	Big Spring					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	3.00	3.00	1.13	2.21	6.34	3.00	3.34
	A2. Critical asset failure at largest WTP[2]	0.1	30	3.00	3.00	1.13	NA	4.13	0.00	4.13
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	3.00	3.00	1.13	2.21	6.34	3.00	3.34
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	3.00	3.00	1.13	NA	4.13	0.00	4.13
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	3.00	3.00	1.13	2.29	6.42	3.00	3.42
	D2. Chemical contamination of largest raw water source	0.1	1	3.00	3.00	1.13	2.29	6.42	3.00	3.42
E. Full unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment					Not Applicable				
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought					Not Applicable				

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering full capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-7d
Cedartown Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.34	1.82	1.18	0.64	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.13	1.82	1.18	0.64	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.34	1.82	1.18	0.64	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.13	1.82	1.18	0.64	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.42	1.82	1.18	0.64	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.42	1.82	1.18	0.64	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-7e
Cedartown Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
11	GA2330000-Polk County	Davis Road	8	5	1.745	1.128	0.000	1.128	3.169	1.252

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-8a
Chatsworth Emergency Scenario Evaluation: 2015

				Peak Day Design Capacity (MGD)				Peak Permitted Withdrawal (MGD-24-hour maximum)[3]							
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Eton WTP[4]**	**Carters Lake WTP**	**Sumach Creek WTP[5]**	**Nix Spring[6]**	**Nix Spring**	**Eton Springs**	**Carters Lake**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[7]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.69	2.00	0.50	0.01	0.01	1.80	2.55	5.46	4.74	14.40	0.00	14.40
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.69	2.00	0.50	0.01	0.01	1.80	2.55	5.46	NA	9.66	0.00	9.66
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.69	2.00	0.50	0.01	0.01	1.80	2.55	5.46	4.74	14.40	2.00	12.40
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.69	2.00	0.50	0.01	0.01	1.80	2.55	5.46	NA	9.66	0.00	9.66
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.69	2.00	0.50	0.01	0.01	1.80	2.55	5.46	4.95	14.60	2.00	12.60
	D2. Chemical contamination of largest raw water source	0.1	1	1.69	2.00	0.50	0.01	0.01	1.80	2.55	5.46	4.95	14.60	2.00	12.60
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable													
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable													
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.05	30	1.69	2.00	0.50	0.01	0.01	1.80	2.55	5.46	NA	9.66	2.00	7.66
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[8]	0.1	120	1.69	2.00	0.50	0.01	0.01	1.80	2.55	1.16	NA	2.34	NA	2.34

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The QWS has two portable generators, rendering no capacity loss at the largest WTP.
2. Meets chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Eton WTP is fed from the Eton and O'Neal springs.
5. Sumach Creek WTP is fed from two groundwater wells and has not operated since 2013. It acts in an emergency capacity only.
6. Nix Spring has a small service area at a higher elevation than the rest of the distribution system.
7. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
8. Carter's Lake is in Hydrologic Unit Code-10 "Coosawattee River-Carter's Lake," which is less than 100 square miles. Purchased water is available from suppliers except for Dalton, which would suffer from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-8b
Chatsworth Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	14.40	2.94	1.91	1.03	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	9.66	2.94	1.91	1.03	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	12.40	2.94	1.91	1.03	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	9.66	2.94	1.91	1.03	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	12.60	2.94	1.91	1.03	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	12.60	2.94	1.91	1.03	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	7.66	2.94	1.91	1.03	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	2.34	2.94	1.91	1.03	0.60	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-8c
Chatsworth Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)						Peak Permitted Withdrawal (MGD-24-hour maximum)[3]								
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Eton WTP[4]**	**Carters Lake WTP**	**Sumach Creek WTP[5]**	**Nix Spring[6]**	**Holly Creek WTP**	**Coosawattee River WTP**	**Nix Spring**	**Eton Springs**	**Carters Lake**	**Holly Creek[7]**	**Coosawattee River[7]**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[8]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	5.46	7.14	20.10	0.00	20.10
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	5.46	NA	12.96	0.00	12.96
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	5.46	7.14	20.10	2.20	17.90
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	5.46	NA	12.96	0.00	12.96
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	5.46	7.35	20.30	2.20	18.10
	D2. Chemical contamination of largest raw water source	0.1	1	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	5.46	7.35	20.30	2.20	18.10
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable																	
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable																	
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.05	30	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	5.46	NA	12.96	2.00	10.96
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[9]	0.1	120	1.69	2.00	0.50	0.01	1.10	2.20	0.01	1.80	2.55	1.10	2.20	1.16	NA	2.23	NA	2.23

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The QWS has two portable generators, rendering no capacity loss at the largest WTP.
2. Meets chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Eton WTP is fed from the Eton and O'Neal springs.
5. Sumach Creek WTP is fed from two groundwater wells and has not been operated since 2013. It acts in an emergency capacity only.
6. Nix Spring has a small service area at a higher elevation than the rest of the distribution system.
7. These permits were approved by EPD, but Chatsworth has yet to construct the associated WTPs.
8. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. The QWS indicated two new 2 MG tanks.
9. Carter's Lake is in Hydrologic Unit Code-10 "Coosawattee River-Carter's Lake," which is less than 100 square miles. Purchased water is available from suppliers except for Dalton, which would suffer from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-8d
Chatsworth Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	20.10	2.66	1.73	0.93	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	12.96	2.66	1.73	0.93	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	17.90	2.66	1.73	0.93	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	12.96	2.66	1.73	0.93	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	18.10	2.66	1.73	0.93	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	18.10	2.66	1.73	0.93	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	10.96	2.66	1.73	0.93	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	2.23	2.66	1.73	0.93	0.43	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-8e
Chatsworth Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)[3]	Individual System Excess Capacity[4] 2015	Individual System Excess Capacity[4] 2050
12	GA1290000-Calhoun	GA Hwy 225 South	6	5	0.982	0.635	0.285	0.300	21.547	18.904
13	GA1290000-Calhoun	Maple Grove Church Road at Old Grade Road	8	5	1.745	1.128	0.285	0.300		
14	TN0000525-Ocoee Utility District	104 Hwy 411	4	5	0.436	0.282	0.110	0.282	unknown	unknown
15	TN0000525-Ocoee Utility District	998 Gap Springs Road	4	5	0.436	0.282	0.110	0.282		
16	GA3130000-Dalton	Hwy 76	12	5	3.927	2.538	0.145	2.538	41.287	25.291
17	GA3130000-Dalton	Mitchell Bridge Road	8	5	1.745	1.128	0.145	1.128		
18	GA3130000-Dalton	Sugar Creek Road	6	5	0.982	0.635	0.145	0.635		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS' regular purchased volumes were distributed logically among the interconnections.
3. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
4. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-9a
Chattooga County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)					Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Well #2	WTP Well #3	WTP Well #4	WTP Well #6	Other Well WTPs[3]					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.00	8.47
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.19	0.58	0.89	0.72	0.37	4.79	NA	7.54	0.00	7.54
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.89	7.58
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.19	0.58	0.89	0.72	0.37	4.79	NA	7.54	0.00	7.54
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.89	7.58
	D2. Chemical contamination of largest raw water source	0.1	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.89	7.58
E. Full unavailability of major raw water sources due to federal or state government actions	--							Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--							Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment							Not Applicable					
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought							Not Applicable					

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has a backup generator, rendering no capacity loss.
2. Meets chemical, and unit process redundancy, rendering no capacity loss.
3. The largest groundwater wells are listed in the table. The remaining wells are summarized in this tab (0.187 MGD and 0.187 MGD).
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-9b
Chattooga County Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	8.47	0.81	0.53	0.28	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	7.54	0.81	0.53	0.28	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	7.58	0.81	0.53	0.28	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	7.54	0.81	0.53	0.28	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	7.58	0.81	0.53	0.28	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	7.58	0.81	0.53	0.28	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-9c
Chattooga County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)					Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Well #2	WTP Well #3	WTP Well #4	WTP Well #6	Other Well WTPs[3]					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.00	8.47
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.19	0.58	0.89	0.72	0.37	4.79	NA	7.54	0.00	7.54
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.89	7.58
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.19	0.58	0.89	0.72	0.37	4.79	NA	7.54	0.00	7.54
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.89	7.58
	D2. Chemical contamination of largest raw water source	0.1	1	0.19	0.58	0.89	0.72	0.37	4.79	0.93	8.47	0.89	7.58
E. Full unavailability of major raw water sources due to federal or state government actions	--							Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--							Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment							Not Applicable					
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought							Not Applicable					

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has a backup generator, rendering no capacity loss.
2. Meets chemical, and unit process redundancy, rendering no capacity loss.
3. The largest groundwater wells are listed in the table. The remaining wells are summarized in this tab (0.187 MGD and 0.187 MGD).
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-9d
Chattooga County Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	8.47	1.24	0.81	0.44	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	7.54	1.24	0.81	0.44	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	7.58	1.24	0.81	0.44	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	7.54	1.24	0.81	0.44	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	7.58	1.24	0.81	0.44	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	7.58	1.24	0.81	0.44	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-9e
Chattooga County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
19	GA0550003-Summerville	Hwy 114 & Raccoon Creek Road	4	5	0.436	0.282	0.000	0.282	1.627	2.292
20	GA0550001-Lyerly	Lick Skillet Road	6	5	1.745	1.128	0.000	1.128	unknown	unknown
21	GA0550001-Lyerly	Hwy 114	6	5	1.745	1.128	0.000	1.128		
22	GA0550001-Lyerly	Gaylor Road	6	5	1.745	1.128	0.000	1.128		
23	AL0000509-Fort Payne Waterworks	Hwy 57	6	5	1.745	1.128	0.000	1.128	unknown	unknown

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-10a
Chickamauga Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Coke Oven Well	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.80	1.50	0.29	3.59	1.80	1.79
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.80	1.50	NA	3.30	0.00	3.30
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.80	1.50	0.29	3.59	1.80	1.79
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.80	1.50	NA	3.30	0.00	3.30
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.80	1.50	0.29	3.59	1.80	1.79
	D2. Chemical contamination of largest raw water source	0.1	1	1.80	1.50	0.29	3.59	1.80	1.79
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable							
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable							

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering full capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-10b
Chickamauga Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	1.79	0.78	0.50	0.27	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	3.30	0.78	0.50	0.27	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.79	0.78	0.50	0.27	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	3.30	0.78	0.50	0.27	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.79	0.78	0.50	0.27	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.79	0.78	0.50	0.27	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-10c
Chickamauga Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Coke Oven Well	New Well					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.80	1.22	1.50	0.89	5.41	1.80	3.61
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.80	1.22	1.50	NA	4.52	0.00	4.52
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.80	1.22	1.50	0.89	5.41	1.80	3.61
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.80	1.22	1.50	NA	4.52	0.00	4.52
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.80	1.22	1.50	0.89	5.41	1.80	3.61
	D2. Chemical contamination of largest raw water source	0.1	1	1.80	1.22	1.50	0.89	5.41	1.80	3.61
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering full capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. Chickamauga plans to install a 1 MG tank.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-10d
Chickamauga Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.61	0.80	0.52	0.28	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.52	0.80	0.52	0.28	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.61	0.80	0.52	0.28	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.52	0.80	0.52	0.28	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.61	0.80	0.52	0.28	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.61	0.80	0.52	0.28	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-10e
Chickamauga Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
24	GA2950003-Walker County	N. Hwy 341	12	5	3.927	2.538	0.000	1.000	4.652	7.803
25	GA2950003-Walker County	Garrets Chapel Road	6	5	1.745	1.128	0.000	0.500		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-11a
Clarkesville Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
				Clarkesville WTP	Soque River	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.5	1.5	1.0	0.60	3.10	0.00	3.10
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.5	1.5	1.0	NA	2.50	1.50	1.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.5	1.5	1.0	0.60	3.10	1.50	1.60
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.5	1.5	1.0	NA	2.50	0.00	2.50
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.5	1.5	1.0	0.69	3.19	1.50	1.69
	D2. Chemical contamination of largest raw water source	0.1	1	1.5	1.5	1.0	0.69	3.19	1.50	1.69
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	1.5	1.5	1.0	NA	1.2	NA	1.2

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Clarkesville WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. Clarkesville WTP met chemical, but not unit process redundancy, rendering full capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Soque River is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is available because their supplier does not suffer from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-11b
Clarkesville Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.10	0.54	0.35	0.19	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	1.00	0.54	0.35	0.19	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.60	0.54	0.35	0.19	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.50	0.54	0.35	0.19	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.69	0.54	0.35	0.19	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.69	0.54	0.35	0.19	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	1.22	0.54	0.35	0.19	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-11c
Clarkesville Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
				Clarkesville WTP	Soque River	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.5	1.5	1.0	0.60	3.10	0.00	3.10
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.5	1.5	1.0	NA	2.50	1.50	1.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.5	1.5	1.0	0.60	3.10	1.50	1.60
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.5	1.5	1.0	NA	2.50	0.00	2.50
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.5	1.5	1.0	0.69	3.19	1.50	1.69
	D2. Chemical contamination of largest raw water source	0.1	1	1.5	1.5	1.0	0.69	3.19	1.50	1.69
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	1.5	1.5	1.0	NA	1.6	NA	1.6

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Clarkesville WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. Clarkesville WTP met chemical, but not unit process redundancy, rendering full capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Soque River is Strahler Stream Order 4 at the withdrawal point (not a major river).

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-11d
Clarkesville Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.10	1.50	0.97	0.52	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	1.00	1.50	0.97	0.52	0.50	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.60	1.50	0.97	0.52	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.50	1.50	0.97	0.52	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.69	1.50	0.97	0.52	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.69	1.50	0.97	0.52	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	1.60	1.50	0.97	0.52	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-11e
Clarkesville Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
26	GA1370004 - Demorest[4]	251 Habersham Mill Rd.	6	5	0.982	0.635	0.000	0.500	11.746	2.722
27	GA1370004 - Demorest[4]	1055 Hollywood Hwy.	6	5	0.982	0.635	0.000	0.500		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. Demorest is a wholesale purchase system which utilizes supplemental groundwater wells in addition to regular purchases from Cornelia, Toccoa, and Baldwin.
   The cumulative excess capacity for the systems is listed here. Demorest would act as a passthrough system.
   Cornelia: 2015 excess capacity is 1.656 MGD; 2050 excess capacity is 1.253 MGD.
   Toccoa: 2015 excess capacity is 6.3 MGD; 2050 excess capacity is 3.8 MGD.
   Baldwin: 2015 excess capacity is 2.119 MGD; no 2050 excess capacity.

Table B-12a
Cleveland Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP 202 (Three Wells)	WTP 206 (One Well)					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.30	0.32	1.47	0.50	2.58	0.32	2.27
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.30	0.32	1.47	NA	2.08	0.00	2.08
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.30	0.32	1.47	0.50	2.58	0.32	2.27
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.30	0.32	1.47	NA	2.08	0.00	2.08
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	0.30	0.32	1.47	0.50	2.58	0.32	2.27
	D2. Chemical contamination of largest raw water source[5]	0.1	1	0.30	0.32	1.47	0.50	2.58	0.32	2.27
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP does not have a backup generator, rendering full capacity loss at the largest WTP.
2. Backup equipment is available, rendering no capacity loss.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-12b
Cleveland Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	2.27	0.59	0.38	0.21	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	2.08	0.59	0.38	0.21	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	2.27	0.59	0.38	0.21	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.08	0.59	0.38	0.21	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	2.27	0.59	0.38	0.21	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	2.27	0.59	0.38	0.21	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-12c
Cleveland Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)			Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP 202 (Falkner and Two Cemetary Wells)	WTP 206 (Clint St. Well)	New Wells[3]					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.30	0.32	0.43	0.53	0.50	2.08	0.43	1.65
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.30	0.32	0.43	0.53	NA	1.59	0.00	1.59
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.30	0.32	0.43	0.53	0.50	2.08	0.43	1.65
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.30	0.32	0.43	0.53	NA	1.59	0.00	1.59
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	0.30	0.32	0.43	0.53	0.50	2.08	0.43	1.65
	D2. Chemical contamination of largest raw water source[5]	0.1	1	0.30	0.32	0.43	0.53	0.50	2.08	0.43	1.65
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable									
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable									

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP does not have a backup generator, rendering full capacity loss at the largest WTP.
2. Backup equipment is available, rendering no capacity loss.
3. Cleveland plans to install two new wells with a combined capacity of 0.432 MGD.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-12d
Cleveland Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	1.65	0.58	0.38	0.20	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	1.59	0.58	0.38	0.20	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.65	0.58	0.38	0.20	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.59	0.58	0.38	0.20	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.65	0.58	0.38	0.20	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.65	0.58	0.38	0.20	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-12e
Cleveland Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[3]	
									2015	2050
28	GA3110072-White County	Intersection of Hwy 129 North and Claude Sims Road	6	5	0.982	0.635	0.025	0.635	1.366	0.434
29	GA3110072-White County	Intersection of 129 South and Westmoreland Road	3	5	0.245	0.159	0.025	0.159		
30	GA3110072-White County	Jess Hunt Road (near Seaborn Drive)	6	5	0.982	0.635	0.025	0.635		
31	GA3110072-White County	Hwy 75 South	4	5	0.436	0.282	0.025	0.282		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS' regular purchased volumes were distributed logically among the interconnections.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-13a
Coosa Water Authority Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)				Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Well 1	WTP Well 2	WTP Well 3	WTP Well 4					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.12	0.17	0.13	0.16	NA	NA	0.58	0.00	0.58
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.12	0.17	0.13	0.16	NA	NA	0.58	0.00	0.58
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
	D2. Chemical contamination of largest raw water source	0.1	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable										
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable										

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. There are no backup generators, rendering full capacity loss at the largest WTP.
2. Backup equipment is available, rendering no capacity loss.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-13b
Coosa Water Authority Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	0.66	0.31	0.20	0.11	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	0.58	0.31	0.20	0.11	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.66	0.31	0.20	0.11	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	0.58	0.31	0.20	0.11	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.66	0.31	0.20	0.11	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	0.66	0.31	0.20	0.11	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-13c
Coosa Water Authority Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)				Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Well 1	WTP Well 2	WTP Well 3	WTP Well 4					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.12	0.17	0.13	0.16	NA	NA	0.58	0.00	0.58
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.12	0.17	0.13	0.16	NA	NA	0.58	0.00	0.58
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
	D2. Chemical contamination of largest raw water source	0.1	1	0.12	0.17	0.13	0.16	NA	0.25	0.83	0.17	0.66
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable										
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable										

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. There are no backup generators, rendering full capacity loss at the largest WTP.
2. Backup equipment is available, rendering no capacity loss.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-13d
Coosa Water Authority Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	0.66	0.73	0.47	0.25	0.06	0.00	0.00
	A2. Critical asset failure at largest WTP	0.58	0.73	0.47	0.25	0.15	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.66	0.73	0.47	0.25	0.06	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	0.58	0.73	0.47	0.25	0.15	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.66	0.73	0.47	0.25	0.06	0.00	0.00
	D2. Chemical contamination of largest raw water source	0.66	0.73	0.47	0.25	0.06	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-14a
Cornelia Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Water Storage (MGD)[5]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Camp Creek WTP	Hazel Creek and Camp Creek Reservoir	Maximum Possible Purchased Water (MGD)[4]				
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.00	4.00	NA	1.88	5.88	0.00	5.88
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.00	4.00	NA	NA	4.00	4.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.00	4.00	NA	1.88	5.88	4.00	1.88
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	4.00	4.00	NA	NA	4.00	0.00	4.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[6]	0.5	1	4.00	4.00	NA	3.08	7.08	0.00	7.08
	D2. Chemical contamination of largest raw water source[6]	0.1	1	4.00	4.00	NA	3.08	7.08	0.00	7.08
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[6]	0.05	30	4.00	4.00	NA	NA	4.00	0.00	4.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[7]	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Camp Creek WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Camp Creek WTP met chemical, but not unit process redundancy, rendering full capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Cornelia can purchase a limited amount of water (0.03 MGD) from Demorest, but a pressure differential restricts the standard availability of this water source. Therefore, it was excluded.
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
6. Cornelia can withdraw from Hazel Creek, Camp Creek Reservoir, or a 76 MG off-stream impoundment. Therefore, contamination of one source or dam failure would render no capacity loss.
7. Their raw water sources are in Hydrologic Unit Code-10 "Soque River," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-14b
Cornelia Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	5.88	2.34	1.52	0.82	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	0.00	2.34	1.52	0.82	2.34	1.52	0.82
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.88	2.34	1.52	0.82	0.47	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.00	2.34	1.52	0.82	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	7.08	2.34	1.52	0.82	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	7.08	2.34	1.52	0.82	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	4.00	2.34	1.52	0.82	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-14c
Cornelia Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)[4]	Water Storage (MGD)[5]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Camp Creek WTP	Hazel Creek and Camp Creek Reservoir					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.50	4.00	NA	1.88	5.88	0.00	5.88
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.50	4.00	NA	NA	4.00	4.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.50	4.00	NA	1.88	5.88	4.00	1.88
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	4.50	4.00	NA	NA	4.00	0.00	4.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[6]	0.5	1	4.50	4.00	NA	3.08	7.08	0.00	7.08
	D2. Chemical contamination of largest raw water source[6]	0.1	1	4.50	4.00	NA	3.08	7.08	0.00	7.08
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[6]	0.05	30	4.50	4.00	NA	NA	4.00	0.00	4.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[7]	Not Applicable								

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

1. Camp Creek WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Camp Creek WTP met chemical, but not unit process redundancy, rendering full capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Cornelia can purchase a limited amount of water (0.03 MGD) from Demorest, but a pressure differential restricts the standard availability of this water source. Therefore, it was excluded.
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
6. Cornelia can withdraw from Hazel Creek, Camp Creek Reservoir, or a 76 MG off-stream impoundment. Therefore, contamination of one source or dam failure would render no capacity loss.
7. Their raw water sources are in Hydrologic Unit Code-10 "Soque River," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-14d
Cornelia Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	5.88	2.75	1.79	0.96	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	0.00	2.75	1.79	0.96	2.75	1.79	0.96
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.88	2.75	1.79	0.96	0.87	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.00	2.75	1.79	0.96	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	7.08	2.75	1.79	0.96	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	7.08	2.75	1.79	0.96	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	4.00	2.75	1.79	0.96	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-15a
Dade County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Well #1[3]	Peak Day Design Capacity (MGD) Dade County WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[4] Lookout Creek	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[5]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.43	3.80	3.80	0.28	1.85	5.94	3.80	2.14
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.43	3.80	3.80	0.28	NA	4.08	0.00	4.08
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.43	3.80	3.80	0.28	1.85	5.94	3.80	2.14
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.43	3.80	3.80	0.28	NA	4.08	0.00	4.08
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.43	3.80	3.80	0.28	2.12	6.21	3.37	2.84
	D2. Chemical contamination of largest raw water source	0.1	1	0.43	3.80	3.80	0.28	2.12	6.21	3.37	2.84
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[6]	Not Applicable									
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[7]	0.1	120	0.43	3.80	3.80	0.28	NA	1.42	NA	1.42

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP does not have a backup generator, rendering partial capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. Dade County has a supplemental groundwater source that feeds directly to the plant. The well capacity is not included in the peak day design capacity.
4. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
6. The QWS does not have a dammed river impoundment.
7. Lookout Creek is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water and groundwater are assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-15b
Dade County Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	2.14	1.77	1.15	0.62	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.08	1.77	1.15	0.62	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	2.14	1.77	1.15	0.62	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.08	1.77	1.15	0.62	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	2.84	1.77	1.15	0.62	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	2.84	1.77	1.15	0.62	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	1.42	1.77	1.15	0.62	0.35	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-15c
Dade County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Well #1[3]	Peak Day Design Capacity (MGD) Dade County WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[4] Lookout Creek	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[5]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.43	3.80	3.80	0.28	2.75	6.84	3.80	3.04
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.43	3.80	3.80	0.28	NA	4.08	0.00	4.08
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.43	3.80	3.80	0.28	2.75	6.84	3.80	3.04
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.43	3.80	3.80	0.28	NA	4.08	0.00	4.08
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.43	3.80	3.80	0.28	3.02	7.11	3.37	3.74
	D2. Chemical contamination of largest raw water source	0.1	1	0.43	3.80	3.80	0.28	3.02	7.11	3.37	3.74
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[6]	Not Applicable									
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[7]	0.1	120	0.43	3.80	3.80	0.28	NA	1.55	NA	1.55

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP does not have a backup generator, rendering partial capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. Dade County has a supplemental groundwater source that feeds directly to the plant. The well capacity is not included in the peak day design capacity.
4. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. The QWS plans to add three 0.5 MG tanks.
6. The QWS does not have a dammed river impoundment.
7. Lookout Creek is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water and groundwater are assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-15d
Dade County Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.04	2.10	1.36	0.73	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.08	2.10	1.36	0.73	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.04	2.10	1.36	0.73	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.08	2.10	1.36	0.73	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.74	2.10	1.36	0.73	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.74	2.10	1.36	0.73	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	1.55	2.10	1.36	0.73	0.54	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-15e
Dade County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3]	
									2015	2050
32	TN0000107-Tennessee American Water Company	Hwy 11 North at Tennessee State Line	4	5	0.436	0.282	0.000	0.282	Unknown	Unknown

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
3. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
4. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-16a
Dahlonega Emergency Scenario Evaluation: 2015

				Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Yahoola Creek WTP**	**Yahoola Creek Reservoir**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[4]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	6.00	9.10	NA	0.67	6.67	0.00	6.67
	A2. Critical asset failure at largest WTP[2]	0.1	30	6.00	9.10	NA	NA	6.00	6.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	6.00	9.10	NA	0.67	6.67	6.00	0.67
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	6.00	9.10	NA	NA	6.00	0.00	6.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	6.00	9.10	NA	1.27	7.27	6.00	1.27
	D2. Chemical contamination of largest raw water source	0.1	1	6.00	9.10	NA	1.27	7.27	6.00	1.27
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	0.05	30	6.00	9.10	NA	NA	6.00	6.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	6.00	9.10	NA	NA	0.39	NA	0.39

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. The WTP met chemical, but not unit process redundancy, rendering full capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Their raw water source is a dammed river impoundment.
6. Yahoola Creek Reservoir is in Hydrologic Unit Code-10 "Yahoola Creek-Chastatee River," which is less than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-16b
Dahlonega Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	6.67	0.98	0.64	0.34	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	0.00	0.98	0.64	0.34	0.98	0.64	0.34
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.67	0.98	0.64	0.34	0.31	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.00	0.98	0.64	0.34	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.27	0.98	0.64	0.34	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.27	0.98	0.64	0.34	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.00	0.98	0.64	0.34	0.98	0.64	0.34
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.39	0.98	0.64	0.34	0.59	0.24	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-16c
Dahlonega Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Yahoola Creek WTP**	**Yahoola Creek Reservoir**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[4]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	6.00	9.10	NA	0.67	6.67	0.00	6.67
	A2. Critical asset failure at largest WTP[2]	0.1	30	6.00	9.10	NA	NA	6.00	6.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	6.00	9.10	NA	0.67	6.67	6.00	0.67
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	6.00	9.10	NA	NA	6.00	0.00	6.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	6.00	9.10	NA	1.27	7.27	6.00	1.27
	D2. Chemical contamination of largest raw water source	0.1	1	6.00	9.10	NA	1.27	7.27	6.00	1.27
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	0.05	30	6.00	9.10	NA	NA	6.00	6.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	6.00	9.10	NA	NA	0.54	NA	0.54

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. The WTP met chemical, but not unit process redundancy, rendering full capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Their raw water source is a dammed river impoundment.
6. Yahoola Creek Reservoir is in Hydrologic Unit Code-10 "Yahoola Creek-Chastatee River," which is less than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-16d
Dahlonega Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	6.67	1.35	0.88	0.47	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	0.00	1.35	0.88	0.47	1.35	0.88	0.47
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.67	1.35	0.88	0.47	0.68	0.21	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.00	1.35	0.88	0.47	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.27	1.35	0.88	0.47	0.08	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.27	1.35	0.88	0.47	0.08	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.00	1.35	0.88	0.47	1.35	0.88	0.47
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.54	1.35	0.88	0.47	0.81	0.34	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-17a
Dalton Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)			Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				V.D. Parrot WTP	Mill Creek WTP	Freeman Springs	Freeman Springs	Mill Creek	Conasauga River to fill River Rd. Reservoir	Coahulla Creek	Conasauga River					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	3.39	32.69	101.58	0.00	101.58
	A2. Critical asset failure at largest WTP[2]	0.1	30	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	3.39	NA	68.89	0.00	68.89
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	3.39	32.69	101.58	50.30	51.28
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	3.39	NA	68.89	0.00	68.89
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	3.39	43.15	112.04	0.00	112.04
	D2. Chemical contamination of largest raw water source[5]	0.1	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	3.39	43.15	112.04	0.00	112.04
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable														
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable														
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[6]	Not Applicable														
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[7]	Not Applicable														

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has a backup generator able to supply full capacity, rendering no capacity loss.
2. The largest WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The largest WTP has two raw water ponds with sufficient capacity for the defined duration if the Conasauga River is contaminated, rendering no capacity loss.
6. The QWS does not have a dammed river impoundment.
7. The Conasauga River is Strahler Stream Order 5 at the withdrawal point (not a major river). The River Road Reservoir (1.2 billion gallons) is upstream of the V.D. Parrot WTP and would provide sufficient stream flow during a severe drought, rendering no capacity loss.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-17b
Dalton Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	101.58	25.18	16.36	8.81	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	68.89	25.18	16.36	8.81	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	51.28	25.18	16.36	8.81	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	68.89	25.18	16.36	8.81	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	112.04	25.18	16.36	8.81	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	112.04	25.18	16.36	8.81	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-17c
Dalton Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)			Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				V.D. Parrot WTP	Mill Creek WTP	Freeman Springs	Freeman Springs	Mill Creek	Conasauga River to fill River Rd. Reservoir	Coahulla Creek	Conasauga River					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	2.30	32.69	100.49	0.00	100.49
	A2. Critical asset failure at largest WTP[2]	0.1	30	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	2.30	NA	67.80	0.00	67.80
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	2.30	32.69	100.49	50.30	50.19
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	2.30	NA	67.80	0.00	67.80
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	2.30	43.15	110.95	0.00	110.95
	D2. Chemical contamination of largest raw water source[5]	0.1	1	50.30	13.20	2.00	2.00	13.20	35.00	6.00	49.40	2.30	43.15	110.95	0.00	110.95
E. Full unavailability of major raw water sources due to federal or state government actions	--											Not Applicable				
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--											Not Applicable				
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[6]											Not Applicable				
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[7]											Not Applicable				

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has a backup generator able to supply full capacity, rendering no capacity loss.
2. The largest WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The largest WTP has two raw water ponds with sufficient capacity for the defined duration if the Conasauga River is contaminated, rendering no capacity loss.
6. The QWS does not have a dammed river impoundment.
7. The Conasauga River is Strahler Stream Order 5 at the withdrawal point (not a major river). The River Road Reservoir (1.2 billion gallons) is upstream of the V.D. Parrot WTP and would provide sufficient stream flow during a severe drought, rendering no capacity loss.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-17d
Dalton Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Long-Range Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	100.49	40.21	26.14	14.07	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	67.80	40.21	26.14	14.07	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	50.19	40.21	26.14	14.07	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	67.80	40.21	26.14	14.07	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	110.95	40.21	26.14	14.07	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	110.95	40.21	26.14	14.07	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-17e
Dalton Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
33	GA0470000 - Catoosa Utility District	Unknown	8	5	1.745	1.128	0.039	1.128	2.740	-0.159
34	TN0000219 - Eastside Utility District	Unknown	8	5	1.745	1.128	0.923	1.128	unknown	unknown
5	GA1290000 - Calhoun	Hwy 41	6	5	0.982	0.635	0.000	0.500	21.047	18.404
35	GA2130000 - Chatsworth	225 North of Central	6	5	0.982	0.635	0.001	0.635	2.490	4.844

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-18a
Demorest Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Garrison Road Well	WTP Licklog Well					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.44	0.34	5.10	1.33	8.21	0.00	8.21
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.44	0.34	5.10	NA	6.88	0.00	6.88
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.44	0.34	5.10	1.33	8.21	1.44	6.77
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.44	0.34	5.10	NA	6.88	0.00	6.88
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.44	0.34	5.10	1.33	8.21	1.44	6.77
	D2. Chemical contamination of largest raw water source	0.1	1	1.44	0.34	5.10	1.33	8.21	1.44	6.77
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has a backup generator, rendering no capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-18b
Demorest Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	8.21	2.13	1.39	0.75	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	6.88	2.13	1.39	0.75	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	6.77	2.13	1.39	0.75	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.88	2.13	1.39	0.75	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	6.77	2.13	1.39	0.75	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	6.77	2.13	1.39	0.75	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-18c
Demorest Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Garrison Road Well	WTP Licklog Well					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.44	0.34	2.40	1.33	5.51	0.00	5.51
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.44	0.34	2.40	NA	4.18	0.00	4.18
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.44	0.34	2.40	1.33	5.51	1.44	4.07
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.44	0.34	2.40	NA	4.18	0.00	4.18
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.44	0.34	2.40	1.33	5.51	1.44	4.07
	D2. Chemical contamination of largest raw water source	0.1	1	1.44	0.34	2.40	1.33	5.51	1.44	4.07
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable								

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has a backup generator, rendering no capacity loss.
2. Backup equipment is available, rendering no capacity loss.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-18d
Demorest Deficits: 2050

			2050 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	5.51	4.15	2.69	1.45	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.18	4.15	2.69	1.45	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	4.07	4.15	2.69	1.45	0.08	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.18	4.15	2.69	1.45	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	4.07	4.15	2.69	1.45	0.08	0.00	0.00
	D2. Chemical contamination of largest raw water source	4.07	4.15	2.69	1.45	0.08	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-18e
Demorest Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
36	GA1370003-Cornelia	Cornelia WTP, Camp Creek Rd.	6	5	0.982	0.635	0.000	0.635	1.656	1.253
37	GA2570001-Toccoa	Talmadge Dr.	10	5	2.727	1.763	0.128	1.763	6.337	3.755
38	GA1370001-Baldwin	120 Coldwater Dr. (Baldwin Water Treatment Plant)	16	3	4.189	2.707	1.859	2.707	2.119	-0.539

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-19a
Ellijay-Gilmer County Emergency Scenario Evaluation: 2015

				Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]						
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Cartecay WTP**	**Ellijay River**	**Cartecay River**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[4]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.45	0.55	4.00	1.13	2.65	8.22	0.00	8.22
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.45	0.55	4.00	1.13	NA	5.58	0.00	5.58
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.45	0.55	4.00	1.13	2.65	8.22	4.45	3.77
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	4.45	0.55	4.00	1.13	NA	5.58	0.00	5.58
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	4.45	0.55	4.00	1.13	6.25	11.82	4.45	7.37
	D2. Chemical contamination of largest raw water source	0.1	1	4.45	0.55	4.00	1.13	6.25	11.82	4.45	7.37
E. Full unavailability of major raw water sources due to federal or state government actions	--						Not Applicable				
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--						Not Applicable				
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]						Not Applicable				
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	4.45	0.55	4.00	1.13	NA	2.15	NA	2.15

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The QWS has a backup generator able to supply full capacity, rendering no capacity loss.
2. The largest WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Cartecay River is Strahler Stream Order 5 at the withdrawal point (not a major river). Purchased water is assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-19b
Ellijay-Gilmer County Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	8.22	2.56	1.66	0.89	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	5.58	2.56	1.66	0.89	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.77	2.56	1.66	0.89	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	5.58	2.56	1.66	0.89	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	7.37	2.56	1.66	0.89	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	7.37	2.56	1.66	0.89	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	2.15	2.56	1.66	0.89	0.41	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-19c
Ellijay-Gilmer County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)			Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Cartecay WTP	New Package Plant #1	New Package Plant #2	Ellijay River	Cartecay River					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.45	1.50	2.00	0.55	4.00	1.13	2.65	11.72	0.00	11.72
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.45	1.50	2.00	0.55	4.00	1.13	NA	9.08	0.00	9.08
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.45	1.50	2.00	0.55	4.00	1.13	2.65	11.72	4.45	7.27
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	4.45	1.50	2.00	0.55	4.00	1.13	NA	9.08	0.00	9.08
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	4.45	1.50	2.00	0.55	4.00	1.13	6.25	15.32	4.45	10.87
	D2. Chemical contamination of largest raw water source	0.1	1	4.45	1.50	2.00	0.55	4.00	1.13	6.25	15.32	4.45	10.87
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable											
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable											
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable											
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	4.45	1.50	2.00	0.55	4.00	1.13	NA	2.71	NA	2.71

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The QWS has a backup generator able to supply full capacity, rendering no capacity loss.
2. The largest WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Cartecay River is Strahler Stream Order 5 at the withdrawal point (not a major river). Purchased water is assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-19d
Ellijay-Gilmer County Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	11.72	3.96	2.58	1.39	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	9.08	3.96	2.58	1.39	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	7.27	3.96	2.58	1.39	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	9.08	3.96	2.58	1.39	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	10.87	3.96	2.58	1.39	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	10.87	3.96	2.58	1.39	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	2.71	3.96	2.58	1.39	1.25	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-19e
Ellijay-Gilmer County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
39	GA2270002-Pickens County[4]	Gilmer/Pickens County Line on Yukon Road	8	5	1.745	1.128	0.000	1.128	44.8	45.2

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. Pickens County is a wholesale purchase system which utilizes Cherokee County, Jasper, Calhoun, and Elijay-Gilmer County as water sources.
The cumulative excess capacity for the systems is listed here. Pickens County would act as a passthrough system.
Cherokee County: 2015 excess capacity is 23.2 MGD; 2050 excess capacity is 26.8 MGD.
Jasper: 2015 excess capacity is 0.5 MGD; No 2050 excess capacity.
Calhoun: 2015 excess capacity is 21.0 MGD; 2050 excess capacity is 18.4 MGD.

Table B-20a
Etowah Water & Sewer Auth. Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Hightower WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Etowah River	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	5.50	6.90	5.60	1.20	12.30	0.00	12.30
	A2. Critical asset failure at largest WTP[2]	0.1	30	5.50	6.90	5.60	NA	11.10	0.00	11.10
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	5.50	6.90	5.60	1.20	12.30	5.50	6.80
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	5.50	6.90	5.60	NA	11.10	0.00	11.10
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	5.50	6.90	5.60	1.38	12.48	5.50	6.98
	D2. Chemical contamination of largest raw water source	0.1	1	5.50	6.90	5.60	1.38	12.48	5.50	6.98
E. Full unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]					Not Applicable				
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	5.50	6.90	5.60	NA	6.16	NA	6.16

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The QWS has a backup generator able to supply full capacity, rendering no capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Etowah River is Strahler Stream Order 4 at the withdrawal point (not a major river).

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-20b
Etowah Water & Sewer Auth. Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	12.30	1.40	0.91	0.49	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	11.10	1.40	0.91	0.49	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	6.80	1.40	0.91	0.49	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	11.10	1.40	0.91	0.49	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	6.98	1.40	0.91	0.49	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	6.98	1.40	0.91	0.49	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	6.16	1.40	0.91	0.49	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 08/24/21
Checked by: GJH 08/31/21

Table B-20c
Etowah Water & Sewer Auth. Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]						
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Hightower WTP**	**Etowah River Pumping to Russell Creek Reservoir[4]**	**Etowah River**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[5]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	5.50	15.00	6.90	5.60	1.20	12.30	0.00	12.30
	A2. Critical asset failure at largest WTP[2]	0.1	30	5.50	15.00	6.90	5.60	NA	11.10	0.00	11.10
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	5.50	15.00	6.90	5.60	1.20	12.30	5.50	6.80
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	5.50	15.00	6.90	5.60	NA	11.10	0.00	11.10
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[6]	0.5	1	5.50	15.00	6.90	5.60	1.38	12.48	0.00	12.48
	D2. Chemical contamination of largest raw water source[6]	0.1	1	5.50	15.00	6.90	5.60	1.38	12.48	0.00	12.48
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[6]	0.05	30	5.50	15.00	6.90	5.60	NA	11.10	0.00	11.10
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[7]	Not Applicable									

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The QWS has a backup generator able to supply full capacity, rendering no capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. The QWS is constructing a 137-acre reservoir.
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
6. If the reservoir is contaminated or the dam fails, the Etowah River can supply full capacity, rendering no capacity loss.
7. The proposed Russell Creek Reservoir is in Hydrologic Unit Code-10 "Upper Etowah River," which is greater than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-20d
Etowah Water & Sewer Auth. Deficits: 2050

			2050 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	12.30	4.21	2.74	1.47	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	11.10	4.21	2.74	1.47	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	6.80	4.21	2.74	1.47	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	11.10	4.21	2.74	1.47	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	12.48	4.21	2.74	1.47	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	12.48	4.21	2.74	1.47	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--				Not Applicable			
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--				Not Applicable			
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	11.10	4.21	2.74	1.47	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought				Not Applicable			

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-20e
Etowah Water & Sewer Auth. Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
40	GA1170050-Forsyth County[4]	Govan	6	5	0.982	0.635	0.001	0.635	5.4	36.2
41	GA1170050-Forsyth County[4]	Blue Ridge Overlook	8	5	1.745	1.128	0.001	1.128		
42	GA0570002-Cherokee County[4]	Cowart	16	3	4.189	2.707	0.004	2.707	23.2	26.8
43	GA0850000-Dawsonville	SR 53 and Perimeter Road	8	5	1.745	1.128	0.000	1.128	unknown	unknown

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. The excess capacity is estimated utilizing the current (Forsyth Co.: 16.7 MGD; Cherokee Co.: 38 MGD) and projected (Forsyth Co.: 60 MGD; Cherokee Co.: 53 MGD) peak day design capacities as well as the current (Forsyth Co.: 11.3 MGD; Cherokee Co.: 14.8 MGD) and projected (Forsyth Co.: 23.8 MGD; Cherokee Co.: 26.2 MGD) ADD found within the 2017 Ch2M and Black and Veatch *Water Resource Management Plan: Metropolitan North Georgia Water Planning District.*

Table B-21a
Floyd County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)				Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Well 2	WTP Well 3	Old Mill Spring	Surface Water WTP	Old Mill Spring	Woodward Creek					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.32	0.58	4.00	0.76	4.00	0.80	9.02	10.56	25.24	4.00	21.24
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.32	0.58	4.00	0.76	4.00	0.80	9.02	NA	14.68	0.00	14.68
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.32	0.58	4.00	0.76	4.00	0.80	9.02	10.56	25.24	4.00	21.24
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.32	0.58	4.00	0.76	4.00	0.80	9.02	NA	14.68	0.00	14.68
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.32	0.58	4.00	0.76	4.00	0.80	9.02	10.56	25.24	4.00	21.24
	D2. Chemical contamination of largest raw water source	0.1	1	0.32	0.58	4.00	0.76	4.00	0.80	9.02	10.56	25.24	4.00	21.24
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable												
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable												
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable												
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	30	0.32	0.58	4.00	0.76	4.00	0.80	9.02	NA	11.82	NA	11.82

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering full capacity loss at the largest WTP.
2. Backup equipment is available, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Woodward Creek is Strahler Stream Order 3 at the withdrawal point (not a major river). Purchased water and groundwater are assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-21b
Floyd County Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	21.24	4.76	3.10	1.67	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	14.68	4.76	3.10	1.67	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	21.24	4.76	3.10	1.67	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	14.68	4.76	3.10	1.67	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	21.24	4.76	3.10	1.67	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	21.24	4.76	3.10	1.67	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	11.82	4.76	3.10	1.67	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-21c
Floyd County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)				Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP Well 2	WTP Well 3	Old Mill Spring	Surface Water WTP	Old Mill Spring	Woodward Creek					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.32	0.58	4.00	0.76	4.00	0.80	8.88	10.56	25.10	4.00	21.10
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.32	0.58	4.00	0.76	4.00	0.80	8.88	NA	14.54	0.00	14.54
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.32	0.58	4.00	0.76	4.00	0.80	8.88	10.56	25.10	4.00	21.10
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	0.32	0.58	4.00	0.76	4.00	0.80	8.88	NA	14.54	0.00	14.54
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.32	0.58	4.00	0.76	4.00	0.80	8.88	10.56	25.10	4.00	21.10
	D2. Chemical contamination of largest raw water source	0.1	1	0.32	0.58	4.00	0.76	4.00	0.80	8.88	10.56	25.10	4.00	21.10
E. Full unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]								Not Applicable					
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	30	0.32	0.58	4.00	0.76	4.00	0.80	8.88	NA	12.22	NA	12.22

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has no backup generator, rendering full capacity loss at the largest WTP.
2. Backup equipment is available, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Woodward Creek is Strahler Stream Order 3 at the withdrawal point (not a major river). Purchased water and groundwater are assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-21d
Floyd County Authority Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	21.10	6.09	3.96	2.13	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	14.54	6.09	3.96	2.13	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	21.10	6.09	3.96	2.13	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	14.54	6.09	3.96	2.13	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	21.10	6.09	3.96	2.13	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	21.10	6.09	3.96	2.13	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	12.22	6.09	3.96	2.13	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-21e
Floyd County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)[3]	Individual System Excess Capacity[4] 2015	Individual System Excess Capacity[4] 2050
44	GA1290000-Calhoun	Roland Hayes Pkwy NW	8	5	1.745	1.128	0.203	1.100	21.047	18.404
45	GA1290000-Calhoun	Hwy 53 South Plainville Ga	12	5	3.927	2.538	0.203	2.000		
46	GA1150002-Rome	Summerville Road	8	5	1.745	1.128	0.047	1.128	11.370	10.516
47	GA1150002-Rome	Bells Ferry Road	8	5	1.745	1.128	0.047	1.128		
48	GA1150002-Rome	Cave Spring Road	4	5	0.436	0.282	0.047	0.250		
49	GA1150002-Rome	Alabama Highway	6	5	0.982	0.635	0.047	0.250		
50	GA1150002-Rome	Kingston Road	6	5	0.982	0.635	0.047	0.250		
51	GA1150002-Rome	Economy Lane	6	5	0.982	0.635	0.047	0.250		
52	GA1150002-Rome	Turner Chapel Road	6	5	0.982	0.635	0.047	0.250		
53	GA1150002-Rome	Parrish Drive	8	5	1.745	1.128	0.047	0.250		
54	GA0150000-Adairsville[5]	Floyd and Bartow County Line on Hwy 140	12	5	3.927	2.538	0.566	2.538	1.6	1.5

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS' regular purchased volumes were distributed logically among the interconnections.
3. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
4. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
5. The excess capacity is estimated utilizing the current (4 MGD) and projected (6 MGD) peak day design capacities as well as the current (2.4 MGD) and projected (4.5 MGD) ADD found within the 2017 Ch2M and Black and Veatch *Water Resource Management Plan: Metropolitan North Georgia Water Planning District*.

Table B-22a
Fort Oglethorpe Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)[1]	0.1	1	7.05	1.20	8.25	2.54	5.71
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice[2]	1.0	3	7.05	NA	7.05	0.00	7.05
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. It was assumed the largest interconnection is lost.
2. It was assumed that the interconnections can supply full capacity.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-22b
Fort Oglethorpe Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	5.71	0.92	0.60	0.32	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	7.05	0.92	0.60	0.32	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-22c
Fort Oglethorpe Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	Not Applicable						
	A2. Critical asset failure at largest WTP[2]	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.79	1.20	5.99	2.54	3.46
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	4.79	NA	4.79	0.00	4.79
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. It was assumed the largest interconnection is lost.
2. It was assumed that the interconnections can supply full capacity.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. Walton plans to add a 0.5 MG tank.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-22d
Fort Oglethorpe Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.46	1.01	0.65	0.35	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.79	1.01	0.65	0.35	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-22e
Fort Oglethorpe Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[2]	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
55	TN0000107-Tennessee American Water Company	Park City Road	8	5	1.745	1.128	0.916	1.128	unknown	unknown
56	GA0470000-Catoosa Utility District Authority	South Cedar Lane	8	5	1.745	1.128	0.000	1.128	2.740	-0.159
57	GA0470000-Catoosa Utility District Authority	Westside Country Dr.	8	5	1.745	1.128	0.000	1.128		
58	GA2950003-Walker County	Lafayette Road	8	5	1.745	1.128	0.000	1.128	4.652	7.803
59	GA2950003-Walker County	Lakeview Drive	12	5	3.927	2.538	0.000	2.538		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-23a
Hiawassee Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Hiawassee WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Lake Chatuge	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	2.00	2.72	NA	0.91	2.91	0.00	2.91
	A2. Critical asset failure at largest WTP[2]	0.1	30	2.00	2.72	NA	NA	2.00	0.00	2.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	2.00	2.72	NA	0.91	2.91	2.00	0.91
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	2.00	2.72	NA	NA	2.00	0.00	2.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	2.00	2.72	NA	1.21	3.21	2.00	1.21
	D2. Chemical contamination of largest raw water source	0.1	1	2.00	2.72	NA	1.21	3.21	2.00	1.21
E. Full unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--					Not Applicable				
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.05	30	2.00	2.72	NA	NA	2.00	2.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[5]					Not Applicable				

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator, rendering no capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Lake Chatuge is in Hydrologic Unit Code-10 "Hiawassee River-Chatuge Lake," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-23b
Hiawassee Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	2.91	1.18	0.77	0.41	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	2.00	1.18	0.77	0.41	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.91	1.18	0.77	0.41	0.27	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.00	1.18	0.77	0.41	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.21	1.18	0.77	0.41	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.21	1.18	0.77	0.41	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.00	1.18	0.77	0.41	1.18	0.77	0.41
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-23c
Hiawassee Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)	Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Water Storage (MGD)[5]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Hiawassee WTP[4]	Lake Chatuge	Maximum Possible Purchased Water (MGD)				
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	3.00	2.72	NA	1.00	3.72	0.00	3.72
	A2. Critical asset failure at largest WTP[2]	0.1	30	3.00	2.72	NA	NA	2.72	0.00	2.72
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	3.00	2.72	NA	1.00	3.72	2.72	1.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	3.00	2.72	NA	NA	2.72	0.00	2.72
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	3.00	2.72	NA	1.30	4.02	2.72	1.30
	D2. Chemical contamination of largest raw water source	0.1	1	3.00	2.72	NA	1.30	4.02	2.72	1.30
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.05	30	3.00	2.72	NA	NA	2.72	2.72	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	Not Applicable								

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator, rendering no capacity loss.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Hiawassee plans to increase their WTP capacity from 2 MGD to 3 MGD.
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. Hiawassee plans to install a new 0.15 MG tank.
6. Lake Chatuge is in Hydrologic Unit Code-10 "Hiawassee River-Chatuge Lake," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-23d
Hiawassee Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.72	3.35	2.18	1.17	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	2.72	3.35	2.18	1.17	0.63	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.00	3.35	2.18	1.17	2.35	1.18	0.18
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.72	3.35	2.18	1.17	0.63	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.30	3.35	2.18	1.17	2.05	0.88	0.00
	D2. Chemical contamination of largest raw water source	1.30	3.35	2.18	1.17	2.05	0.88	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.00	3.35	2.18	1.17	3.35	2.18	1.17
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-24a
Jasper Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Jasper WTP[4]	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Long Swamp Creek[5]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[5]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	3.44	1.00	4.02	1.56	8.02	0.49	7.53
	A2. Critical asset failure at largest WTP[2]	0.1	30	3.44	1.00	4.02	NA	6.46	0.00	6.46
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	3.44	1.00	4.02	1.56	8.02	2.44	5.58
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	3.44	1.00	4.02	NA	6.46	0.00	6.46
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	3.44	1.00	4.02	2.04	8.50	1.00	7.50
	D2. Chemical contamination of largest raw water source	0.1	1	3.44	1.00	4.02	2.04	8.50	1.00	7.50
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	3.44	1.00	4.02	NA	6.18	NA	6.18

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator whose capacity is unknown. 80% capacity is assumed.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. The WTP is fed from three sources: one surface water intake (2 MGD), and two groundwater intakes (0.576 MGD & 0.864 MGD).
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
6. Long Swamp Creek is Strahler Stream Order 3 at the withdrawal point (not a major river). Groundwater and purchased water are assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-24b
Jasper Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	7.53	1.81	1.18	0.63	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	6.46	1.81	1.18	0.63	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	5.58	1.81	1.18	0.63	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.46	1.81	1.18	0.63	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	7.50	1.81	1.18	0.63	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	7.50	1.81	1.18	0.63	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	6.18	1.81	1.18	0.63	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-24c
Jasper Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Jasper WTP[4]	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Long Swamp Creek[5]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[5]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	3.44	1.00	4.02	1.56	8.02	0.49	7.53
	A2. Critical asset failure at largest WTP[2]	0.1	30	3.44	1.00	4.02	NA	6.46	0.00	6.46
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	3.44	1.00	4.02	1.56	8.02	2.44	5.58
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	3.44	1.00	4.02	NA	6.46	0.00	6.46
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	3.44	1.00	4.02	2.04	8.50	1.00	7.50
	D2. Chemical contamination of largest raw water source	0.1	1	3.44	1.00	4.02	2.04	8.50	1.00	7.50
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	3.44	1.00	4.02	NA	6.40	NA	6.40

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The WTP has a backup generator whose capacity is unknown. 80% capacity is assumed.
2. The WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. The WTP is fed from three sources: one surface water intake (2 MGD), and two groundwater intakes (0.576 MGD & 0.864 MGD).
5. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
6. Long Swamp Creek is Strahler Stream Order 3 at the withdrawal point (not a major river). Groundwater and purchased water are assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-24d
Jasper Deficits: 2050

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	7.53	2.37	1.54	0.83	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	6.46	2.37	1.54	0.83	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	5.58	2.37	1.54	0.83	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.46	2.37	1.54	0.83	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	7.50	2.37	1.54	0.83	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	7.50	2.37	1.54	0.83	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	6.40	2.37	1.54	0.83	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-24e
Jasper Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
60	GA0570002-Cherokee County	Unknown	6[(4)]	5	0.982	0.635	0.000	0.635	23.2	26.8
61	GA2270002-Pickens County[5]	Hwy 53 West and Pleasant Hill Road	8	5	1.745	1.128	0.067	1.128	47.903	46.613
62	GA2270002-Pickens County[5]	Bent Tree Drive and Cove Road	8	5	1.745	1.128	0.067	1.128		
63	GA2270002-Pickens County[5]	Burnt Mountain Road and Highway 136	8	5	1.745	1.128	0.067	1.128		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day
WTP - water treatment plant

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The 2015 purchased value from GA2270002 - Pickens County was split between these three interconnections.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. The details of this interconnection are unknown. A 6-inch diameter interconnection is assumed.
5. Pickens County is a wholesale purchase system which plants to install a new WTP by 2050 (0.33 MGD) in addition to purchases from Cherokee County, Jasper, Calhoun, Big Canoe Subdivision, and Ellijay-Gilmer County.
   The cumulative excess capacity for the systems is listed here. Pickens County would act as a passthrough system.
   Cherokee County: 2015 excess capacity is 23.2 MGD; 2050 excess capacity is 26.8 MGD.
   Calhoun: 2015 excess capacity is 21.0 MGD; 2050 excess capacity is 18.4 MGD.
   Big Canoe Subdivision: The 2015 & 2050 excess capacities are unknown. The hydraulic limits of the line are used in lieu of the excess capacity.
   Ellijay-Gilmer County: 2015 excess capacity is 1.894 MGD; 2050 excess capacity is 0.588 MGD.

Table B-25a
LaFayette Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Lee School Road Well WTP	Big Springs WTP	Big Springs (Upper and Lower Springs)					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.08	1.73	1.65	2.90	7.10	12.73	1.65	11.08
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.08	1.73	1.65	2.90	NA	5.63	0.00	5.63
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.08	1.73	1.65	2.90	7.10	12.73	1.65	11.08
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	1.08	1.73	1.65	2.90	NA	5.63	0.00	5.63
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.08	1.73	1.65	2.90	7.10	12.73	1.65	11.08
	D2. Chemical contamination of largest raw water source	0.1	1	1.08	1.73	1.65	2.90	7.10	12.73	1.65	11.08
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable									
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable									
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable									

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has no backup generator, rendering full capacity loss.
2. Big Springs WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-25b
LaFayette Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	11.08	2.60	1.69	0.91	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	5.63	2.60	1.69	0.91	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	11.08	2.60	1.69	0.91	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	5.63	2.60	1.69	0.91	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	11.08	2.60	1.69	0.91	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	11.08	2.60	1.69	0.91	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-25c
LaFayette Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)				Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**New Lee School Road Well WTP**	**New Dixon Springs WTP**	**Lee School Road Well WTP**	**Big Springs WTP**	**Big Springs (Upper and Lower Springs)**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[4]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.00	1.00	1.08	1.73	1.65	2.01	7.10	13.83	1.65	12.18
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.00	1.00	1.08	1.73	1.65	2.01	NA	6.74	0.00	6.74
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.00	1.00	1.08	1.73	1.65	2.01	7.10	13.83	1.65	12.18
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	1.00	1.00	1.08	1.73	1.65	2.01	NA	6.74	0.00	6.74
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.00	1.00	1.08	1.73	1.65	2.01	7.10	13.83	1.65	12.18
	D2. Chemical contamination of largest raw water source	0.1	1	1.00	1.00	1.08	1.73	1.65	2.01	7.10	13.83	1.65	12.18
E. Full unavailability of major raw water sources due to federal or state government actions	--							Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--							Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment							Not Applicable					
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought							Not Applicable					

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The largest WTP has no backup generator, rendering full capacity loss.
2. Big Springs WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-25d
LaFayette Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	12.18	2.44	1.59	0.85	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	6.74	2.44	1.59	0.85	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	12.18	2.44	1.59	0.85	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.74	2.44	1.59	0.85	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	12.18	2.44	1.59	0.85	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	12.18	2.44	1.59	0.85	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-25e
LaFayette Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)[3]	Individual System Excess Capacity[4] 2015	Individual System Excess Capacity[4] 2050
64	GA2950003-Walker County	Lee Clarkston Road	12	5	3.927	2.538	0.747	2.000	4.652	7.803
65	GA0470000-Catoosa Utility District Authority	Peavine Road and East Long Hollow Road	6	5	0.982	0.635	0.001	0.300	2.740	-0.159
66	GA0470000-Catoosa Utility District Authority	Georgia Hwy 151 at Catoosa County Line	6	5	0.982	0.635	0.001	0.200		
67	GA0470000-Catoosa Utility District Authority	Long Hollow Road at Catoosa Couty Line	6	5	0.982	0.635	0.001	0.200		
68	GA0470000-Catoosa Utility District Authority	Twin Cedars Road at Catoosa County Line	6	5	0.982	0.635	0.001	0.200		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The 2015 purchased value from GA0470000 - Catoosa Utility District Authority was split between those four interconnections.
3. The QWS reported a maximum possible purchased water value. The more conservative value was chosen.
4. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-26a
McCaysville Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) McCaysville WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Toccoa River	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.30	1.00	0.63	1.11	2.74	1.00	1.74
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.30	1.00	0.63	NA	1.63	0.00	1.63
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.30	1.00	0.63	1.11	2.74	1.00	1.74
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	1.30	1.00	0.63	NA	1.63	0.00	1.63
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.30	1.00	0.63	1.34	2.97	1.00	1.97
	D2. Chemical contamination of largest raw water source	0.1	1	1.30	1.00	0.63	1.34	2.97	1.00	1.97
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	1.30	1.00	0.00	NA	0.29	NA	0.29

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

1. McCaysville WTP has no backup generator able to supply full treatment capacity, rendering full capacity loss at the largest WTP.
2. McCaysville WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Toccoa River is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is unavailable because their supplier also suffers from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-26b
McCaysville Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	1.74	0.74	0.48	0.26	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	1.63	0.74	0.48	0.26	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.74	0.74	0.48	0.26	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.63	0.74	0.48	0.26	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.97	0.74	0.48	0.26	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.97	0.74	0.48	0.26	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.29	0.74	0.48	0.26	0.44	0.18	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-26c
McCaysville Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) McCaysville WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Toccoa River	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.30	1.00	0.63	1.11	2.74	1.00	1.74
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.30	1.00	0.63	NA	1.63	0.00	1.63
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.30	1.00	0.63	1.11	2.74	1.00	1.74
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	1.30	1.00	0.63	NA	1.63	0.00	1.63
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.30	1.00	0.63	1.34	2.97	1.00	1.97
	D2. Chemical contamination of largest raw water source	0.1	1	1.30	1.00	0.63	1.34	2.97	1.00	1.97
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	0.1	120	1.30	1.00	0.00	NA	0.36	NA	0.36

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. McCaysville WTP has no backup generator able to supply full treatment capacity, rendering full capacity loss at the largest WTP.
2. McCaysville WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. The QWS does not have a dammed river impoundment.
6. The Toccoa River is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is unavailable because their supplier also suffers from Risk H.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-26d
McCaysville Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	1.74	0.90	0.59	0.32	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	1.63	0.90	0.59	0.32	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.74	0.90	0.59	0.32	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.63	0.90	0.59	0.32	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	1.97	0.90	0.59	0.32	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	1.97	0.90	0.59	0.32	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	0.36	0.90	0.59	0.32	0.54	0.23	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-26e
McCaysville Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)[3]	Individual System Excess Capacity[2]	
									2015	2050
3	GA1110000 - Blue Ridge	Hwy 5 and Old Hwy 5 intersection	6	5	0.982	0.635	0.000	0.635	0.733	0.635

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-27a
Notla Water Authority Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)					Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP 202	WTP 203	WTP 207	WTP 210	Surface Water WTP	Lake Nottely					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1.00	0.17	0.29	0.22	0.22	2.00	2.00	0.63	1.83	5.36	2.00	3.36
	A2. Critical asset failure at largest WTP[2]	0.1	30.00	0.17	0.29	0.22	0.22	2.00	2.00	0.63	NA	3.53	0.00	3.53
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1.00	0.17	0.29	0.22	0.22	2.00	2.00	0.63	1.83	5.36	2.00	3.36
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3.00	0.17	0.29	0.22	0.22	2.00	2.00	0.63	NA	3.53	0.00	3.53
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1.00	0.17	0.29	0.22	0.22	2.00	2.00	0.63	2.30	5.83	2.00	3.83
	D2. Chemical contamination of largest raw water source	0.1	1.00	0.17	0.29	0.22	0.22	2.00	2.00	0.63	2.30	5.83	2.00	3.83
E. Full unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--								Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.05	30	0.17	0.29	0.22	0.22	2.00	2.00	0.63	NA	3.53	2.00	1.53
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[5]								Not Applicable					

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The Surface Water WTP has no backup generator able to supply full treatment capacity, rendering full capacity loss at the largest WTP.
2. The Surface Water WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Lake Nottely is in Hydrologic Unit Code-10 "Nottely River-Nottely Lake," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-27b
Notla Water Authority Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.36	0.83	0.54	0.29	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	3.53	0.83	0.54	0.29	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.36	0.83	0.54	0.29	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	3.53	0.83	0.54	0.29	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.83	0.83	0.54	0.29	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.83	0.83	0.54	0.29	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	1.53	0.83	0.54	0.29	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-27c
Notla Water Authority Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)					Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				WTP 202	WTP 203	WTP 207	WTP 210	Surface Water WTP	Lake Nottely					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.17	0.29	0.22	0.22	2.00	2.00	0.63	1.83	5.36	2.00	3.36
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.17	0.29	0.22	0.22	2.00	2.00	0.63	NA	3.53	0.00	3.53
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.17	0.29	0.22	0.22	2.00	2.00	0.63	1.83	5.36	2.00	3.36
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	0.17	0.29	0.22	0.22	2.00	2.00	0.63	NA	3.53	0.00	3.53
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.17	0.29	0.22	0.22	2.00	2.00	0.63	2.30	5.83	2.00	3.83
	D2. Chemical contamination of largest raw water source	0.1	1	0.17	0.29	0.22	0.22	2.00	2.00	0.63	2.30	5.83	2.00	3.83
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable												
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable												
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.05	30	0.17	0.29	0.22	0.22	2.00	2.00	0.63	NA	3.53	2.00	1.53
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[5]	Not Applicable												

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. The Surface Water WTP has no backup generator able to supply full treatment capacity, rendering full capacity loss at the largest WTP.
2. The Surface Water WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Lake Nottely is in Hydrologic Unit Code-10 "Nottely River-Nottely Lake," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-27d
Notla Water Authority Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.36	2.14	1.39	0.75	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	3.53	2.14	1.39	0.75	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	3.36	2.14	1.39	0.75	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	3.53	2.14	1.39	0.75	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	3.83	2.14	1.39	0.75	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	3.83	2.14	1.39	0.75	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	1.53	2.14	1.39	0.75	0.61	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-27e
Notla Water Authority Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
2	GA2910000-Blairsville	Unknown	6	5	0.982	0.635	0.000	0.635	0.729	0.794

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-28a
Pickens County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)[1]	0.1	1	7.63	1.66	9.28	1.13	8.15
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice[2]	1.0	3	7.63	NA	7.63	0.00	7.63
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. It was assumed the largest interconnection is lost.
2. It was assumed that the interconnections can supply full capacity.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-28b
Pickens County Deficits: 2015

			2015 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	8.15	0.56	0.37	0.20	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	7.63	0.56	0.37	0.20	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-28c
Pickens County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) New WTP	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.33	6.57	2.86	9.76	0.33	9.43
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.33	6.57	NA	6.90	0.33	6.57
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)[3]	0.1	1	0.33	6.57	2.86	9.76	1.13	8.63
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	0.33	6.57	NA	6.90	0.00	6.90
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.33	6.57	2.86	9.76	0.33	9.43
	D2. Chemical contamination of largest raw water source	0.1	1	0.33	6.57	2.86	9.76	0.33	9.43
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable							
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable							

Notes:

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. It is unknown whether Pickens County WTP will have a backup generator able to supply full treatment capacity. Therefore, full capacity loss is assumed.
2. It is unknown whether Pickens County WTP will meet chemical and unit process redundancy. Therefore, full capacity loss is assumed.
3. It was assumed the largest interconnection is lost.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. The QWS plans to add two new 1 MG tanks.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-28d
Pickens County Deficits: 2050

			2050 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	9.43	1.29	0.84	0.45	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	6.57	1.29	0.84	0.45	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	8.63	1.29	0.84	0.45	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.90	1.29	0.84	0.45	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	9.43	1.29	0.84	0.45	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	9.43	1.29	0.84	0.45	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Table B-28e
Pickens County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[3]	
									2015	2050
69	GA0570002-Cherokee County	Old Highway 5 at Riverstone Subdivision	8	5	1.745	1.128	0.026	1.128	23.2	26.8
70	GA0570002-Cherokee County	Yellow Creek Road at county line	8	5	1.745	1.128	0.026	1.128		
71	GA0570002-Cherokee County	Pickens Street at county line	6	5	0.982	0.635	0.026	0.635		
72	GA2270000-Jasper	Dragon Drive	6	5	0.982	0.635	0.067	0.635	0.517	-0.035
61	GA2270000-Jasper	Hwy 53 West and Pleasant Hill Road	8	5	1.745	1.128	0.067	1.128		
63	GA2270000-Jasper	Burnt Mountain Road and Highway 136	8	5	1.745	1.128	0.067	1.128		
73	GA1290000-Calhoun	Orr Mill Road	8	5	1.745	1.128	0.360	1.128	21.047	18.404
74	GA2270004-Big Canoe Subdivision	Hyacinth Hill and Wedgewood Drive	6	5	0.982	0.635	0.002	0.635	unknown	unknown
75	GA2270004-Big Canoe Subdivision	Cove Road and Whitley Road	8	5	1.745	1.128	0.002	1.128		
39	GA1230000-Ellijay-Gilmer County[4]	Gilmer/Pickens County Line on Yukon Road	8	5	1.745	1.128	0.000	1.128	1.894	0.588

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The 2015 purchased value from GA0570002-Cherokee County was split between those three interconnections. The 2015 purchase value from GA2270000-Jasper was split between those three interconnections. The 2015 purchase value from GA2270004-Big Canoe Subdivision was split between those two interconnections.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. There is a new purchase agreement between Pickens County and GA1230000-Ellijay-Gilmer County in which Pickens County will purchase 0.15 MGD after 2019.

Table B-29a
Polk County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Deaton Springs WTP	Mulco-Ammons WTP	Deaton Springs	Aragon, Ammons, and Mulco Springs					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.00	1.73	4.00	1.60	1.41	2.45	9.46	0.00	9.46
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.00	1.73	4.00	1.60	1.41	NA	7.01	0.00	7.01
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.00	1.73	4.00	1.60	1.41	2.45	9.46	4.00	5.46
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	4.00	1.73	4.00	1.60	1.41	NA	7.01	0.00	7.01
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	4.00	1.73	4.00	1.60	1.41	3.41	10.42	4.00	6.42
	D2. Chemical contamination of largest raw water source	0.1	1	4.00	1.73	4.00	1.60	1.41	3.41	10.42	4.00	6.42
E. Full unavailability of major raw water sources due to federal or state government actions	--							Not Applicable				
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--							Not Applicable				
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment							Not Applicable				
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought							Not Applicable				

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Deaton Springs WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Deaton Springs WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-29b
Polk County Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	9.46	2.49	1.62	0.87	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	7.01	2.49	1.62	0.87	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	5.46	2.49	1.62	0.87	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	7.01	2.49	1.62	0.87	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	6.42	2.49	1.62	0.87	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	6.42	2.49	1.62	0.87	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-29c
Polk County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Deaton Springs WTP	Mulco-Ammons WTP	Deaton Springs	Aragon, Ammons, and Mulco Springs					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	4.00	1.73	4.00	1.60	1.41	2.45	9.46	0.00	9.46
	A2. Critical asset failure at largest WTP[2]	0.1	30	4.00	1.73	4.00	1.60	1.41	NA	7.01	0.00	7.01
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	4.00	1.73	4.00	1.60	1.41	2.45	9.46	4.00	5.46
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	4.00	1.73	4.00	1.60	1.41	NA	7.01	0.00	7.01
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	4.00	1.73	4.00	1.60	1.41	3.41	10.42	4.00	6.42
	D2. Chemical contamination of largest raw water source	0.1	1	4.00	1.73	4.00	1.60	1.41	3.41	10.42	4.00	6.42
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable										
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable										

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Deaton Springs WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Deaton Springs WTP met chemical and unit process redundancy, rendering no capacity loss.
3. The smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-29d
Polk County Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	9.46	4.35	2.83	1.52	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	7.01	4.35	2.83	1.52	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	5.46	4.35	2.83	1.52	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	7.01	4.35	2.83	1.52	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	6.42	4.35	2.83	1.52	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	6.42	4.35	2.83	1.52	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-29e
Polk County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
76	GA1430007-Haralson County	Rockmart- Felton Road	4	5	0.436	0.282	0.019	0.282	1.732	2.190
77	GA233017-Paulding County	895 New Vinson Mtn Road	8	5	1.745	1.128	0.041	1.128	unknown	unknown

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-30a
Rockmart Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) WTP for Three Wells[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	3.60	1.13	1.74	6.47	0.00	6.47
	A2. Critical asset failure at largest WTP[2]	0.1	30	3.60	1.13	NA	4.73	0.00	4.73
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	3.60	1.13	1.74	6.47	3.60	2.87
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	3.60	1.13	NA	4.73	0.00	4.73
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	3.60	1.13	1.74	6.47	1.95	4.52
	D2. Chemical contamination of largest raw water source[5]	0.1	1	3.60	1.13	1.74	6.47	1.95	4.52
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable							
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable							

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Rockmart WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Meets chemical and unit process redundancy, rendering no capacity loss.
3. Rockmart's WTP is fed directly from three wells: Plum Street Well (1.95 MGD), Richardson Well (0.72 MGD), and Beauregard Well (1.1 MGD).
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. It was assumed that the largest well (1.95 MGD) was subjected to contamination.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-30b
Rockmart Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	6.47	1.49	0.97	0.52	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.73	1.49	0.97	0.52	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	2.87	1.49	0.97	0.52	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.73	1.49	0.97	0.52	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	4.52	1.49	0.97	0.52	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	4.52	1.49	0.97	0.52	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-30c
Rockmart Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Conventional WTP[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	3.60	1.13	1.74	6.47	0.00	6.47
	A2. Critical asset failure at largest WTP[2]	0.1	30	3.60	1.13	NA	4.73	0.00	4.73
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	3.60	1.13	1.74	6.47	3.60	2.87
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	3.60	1.13	NA	4.73	0.00	4.73
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	3.60	1.13	1.74	6.47	1.95	4.52
	D2. Chemical contamination of largest raw water source[5]	0.1	1	3.60	1.13	1.74	6.47	1.95	4.52
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable							
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable							
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable							

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Rockmart WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Meets chemical and unit process redundancy, rendering no capacity loss.
3. Rockmart's WTP is fed directly from three wells: Plum Street Well (1.95 MGD), Richardson Well (0.72 MGD), and Beauregard Well (1.1 MGD).
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. It was assumed that the largest well (1.95 MGD) was subjected to contamination.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-30d
Rockmart Deficits: 2050

			2050 - Immediate Reliability Target					
Risk	**Scenario**	**Available Water Supply (MGD)**	**Total Demand (MGD)[1]**	**65% ADD (MGD)**	**35% ADD (MGD)**	**Total Demand Deficit (MGD)**	**65% ADD Deficit (MGD)**	**35% ADD Deficit (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	6.47	0.74	0.48	0.26	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	4.73	0.74	0.48	0.26	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	2.87	0.74	0.48	0.26	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	4.73	0.74	0.48	0.26	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	4.52	0.74	0.48	0.26	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	4.52	0.74	0.48	0.26	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-30e
Rockmart Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
11	GA2330000-Cedartown	Davis Road	8	5	1.745	1.128	0.000	1.128	1.413	1.178

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-31a
Rome Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Rome WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Oostanaula and Etowah Rivers	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	18	18	2.29	6.19	26.48	0.00	26.48
	A2. Critical asset failure at largest WTP[2]	0.1	30	18	18	2.29	NA	20.29	0.00	20.29
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	18	18	2.29	6.19	26.48	18.00	8.48
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	18	18	2.29	NA	20.29	0.00	20.29
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	18	18	2.29	6.64	26.93	6.00	20.93
	D2. Chemical contamination of largest raw water source[5]	0.1	1	18	18	2.29	6.64	26.93	6.00	20.93
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	Not Applicable								

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Rome WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. Rome WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Their on-site raw water sources are not dammed river impoundments. There are two independent raw water sources: Oostanaula River (30 MGD) and Etowah River (12 MGD).
6. The Oostanaula River and Etowah River are Strahler Stream Order 7 and 6, respectively, at the withdrawal point (major rivers).

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-31b
Rome Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	26.48	6.68	4.34	2.34	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	20.29	6.68	4.34	2.34	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	8.48	6.68	4.34	2.34	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	20.29	6.68	4.34	2.34	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	20.93	6.68	4.34	2.34	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	20.93	6.68	4.34	2.34	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-31c
Rome Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) — Rome WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] — Oostanaula and Etowah Rivers	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	18	18	0.05	7.39	25.44	0.00	25.44
	A2. Critical asset failure at largest WTP[2]	0.1	30	18	18	0.05	NA	18.05	0.00	18.05
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	18	18	0.05	7.39	25.44	18.00	7.44
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	18	18	0.05	NA	18.05	0.00	18.05
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	18	18	0.05	7.84	25.89	0.00	25.89
	D2. Chemical contamination of largest raw water source[5]	0.1	1	18	18	0.05	7.84	25.89	0.00	25.89
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	Not Applicable								
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	Not Applicable								

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Rome WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. Rome WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. Rome plans to install a new 2 MG ground storage tank.
5. Their on-site raw water sources are not dammed river impoundments. There are two independent raw water sources: Oostanaula River (30 MGD) and Etowah River (12 MGD). The raw water line for the Etowah River will be expanded to provide up to the permitted limit.
6. The Oostanaula River and Etowah River are Strahler Stream Order 7 and 6, respectively, at the withdrawal point (major rivers).

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-31d
Rome Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	25.44	7.48	4.86	2.62	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	18.05	7.48	4.86	2.62	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	7.44	7.48	4.86	2.62	0.04	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	18.05	7.48	4.86	2.62	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	25.89	7.48	4.86	2.62	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	25.89	7.48	4.86	2.62	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-31e
Rome Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[3]	
									2015	2050
46	GA1150001-Floyd County	Summerville Road	8	5	1.745	1.128	0.006	1.128	2.239	-0.438
47	GA1150001-Floyd County	Bells Ferry Road	8	5	1.745	1.128	0.006	1.128		
48	GA1150001-Floyd County	Cave Spring Road	4	5	0.436	0.282	0.006	0.250		
49	GA1150001-Floyd County	Alabama Highway	6	5	0.982	0.635	0.006	0.250		
50	GA1150001-Floyd County	Kingston Road	6	5	0.982	0.635	0.006	0.250		
51	GA1150001-Floyd County	Economy Lane	6	5	0.982	0.635	0.006	0.250		
52	GA1150001-Floyd County	Turner Chapel Road	6	5	0.982	0.635	0.006	0.250		
53	GA1150001-Floyd County	Parrish Drive	8	5	1.745	1.128	0.006	0.250		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The 2015 purchased value from GA1150001-Floyd County was split between those eight interconnections.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-32a
Summerville Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)		Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Lowe Spring WTP	Summerville WTP	Lowe Spring	Raccoon Creek					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	0.40	3.00	0.75	3.00	2.04	1.91	7.36	0.00	7.36
	A2. Critical asset failure at largest WTP[2]	0.1	30	0.40	3.00	0.75	3.00	2.04	NA	5.45	0.00	5.45
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	0.40	3.00	0.75	3.00	2.04	1.91	7.36	3.00	4.36
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	0.40	3.00	0.75	3.00	2.04	NA	5.45	0.00	5.45
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	0.40	3.00	0.75	3.00	2.04	2.09	7.54	3.00	4.54
	D2. Chemical contamination of largest raw water source	0.1	1	0.40	3.00	0.75	3.00	2.04	2.09	7.54	3.00	4.54
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable										
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable										
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[5]	0.1	120	0.40	3.00	0.75	3.00	2.04	NA	2.76	NA	2.76

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Summerville WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Summerville WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Raccoon Creek is Strahler Stream Order 4 at the withdrawal point (not a major river). Purchased water is assumed to be available.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-32b
Summerville Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	7.36	1.78	1.15	0.62	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	5.45	1.78	1.15	0.62	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	4.36	1.78	1.15	0.62	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	5.45	1.78	1.15	0.62	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	4.54	1.78	1.15	0.62	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	4.54	1.78	1.15	0.62	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	2.76	1.78	1.15	0.62	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-32c
Summerville Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)			Peak Permitted Withdrawal (MGD-24-hour maximum)[3]		Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				New Well WTP	Lowe Spring WTP	Summerville WTP	Lowe Spring	Raccoon Creek					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	1.14	0.40	3.00	0.75	3.00	2.04	1.91	8.50	0.00	8.50
	A2. Critical asset failure at largest WTP[2]	0.1	30	1.14	0.40	3.00	0.75	3.00	2.04	NA	6.59	0.00	6.59
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	1.14	0.40	3.00	0.75	3.00	2.04	1.91	8.50	3.00	5.50
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1	3	1.14	0.40	3.00	0.75	3.00	2.04	NA	6.59	0.00	6.59
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	1.14	0.40	3.00	0.75	3.00	2.04	2.09	8.68	3.00	5.68
	D2. Chemical contamination of largest raw water source	0.1	1	1.14	0.40	3.00	0.75	3.00	2.04	2.09	8.68	3.00	5.68
E. Full unavailability of major raw water sources due to federal or state government actions	--						Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--						Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment						Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[5]	0.1	120	1.14	0.40	3.00	0.75	3.00	2.04	NA	3.77	NA	3.77

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Summerville WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss at the largest WTP.
2. Summerville WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Raccoon Creek is Strahler Stream Order 4 at the withdrawal point (not a major river). Groundwater and purchased water is assumed to be available.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-32d
Summerville Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target					
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)	Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	8.50	1.46	0.95	0.51	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	6.59	1.46	0.95	0.51	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	5.50	1.46	0.95	0.51	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	6.59	1.46	0.95	0.51	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	5.68	1.46	0.95	0.51	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	5.68	1.46	0.95	0.51	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	3.77	1.46	0.95	0.51	0.00	0.00	0.00

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-32e
Summerville Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
78	GA0550049-Trion	US-27	10	5	2.727	1.763	0.000	1.763	unknown	unknown
19	GA0550000-Chattooga County	Hwy 114 & Raccoon Creek Road	4	5	0.436	0.282	0.000	0.282	1.931	1.501

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-33a
Towns County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)[1]	0.1	1	1.77	1.03	2.80	0.63	2.17
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice[2]	1	3	1.77	NA	1.77	0.00	1.77
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. It was assumed the largest interconnection is lost.
2. It was assumed that the interconnections can supply full capacity.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-33b
Towns County Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	2.17	0.62	0.40	0.22	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.77	0.62	0.40	0.22	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-33c
Towns County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[3]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)[1]	0.1	1	0.91	1.18	2.10	0.63	1.46
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice[2]	1	3	0.91	NA	0.91	0.00	0.91
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

Prepared by: LCT 09/13/21

Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. It was assumed the largest interconnection is lost.
2. It was assumed that the interconnections can supply full capacity.
3. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage. Towns County plans to add a 0.25 MG tank.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-33d
Towns County Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	Not Applicable						
	A2. Critical asset failure at largest WTP	Not Applicable						
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.46	2.29	1.49	0.80	0.83	0.03	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	0.91	2.29	1.49	0.80	1.38	0.58	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	Not Applicable						
	D2. Chemical contamination of largest raw water source	Not Applicable						
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	Not Applicable						
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-33e
Towns County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)[2]	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[3] 2015	Individual System Excess Capacity[3] 2050
79	NC0122010-Clay County[4]	Industrial Park at Clay County/Towns County line	6	5	0.982	0.635	0.000	0.635	0.334	0.297
80	GA2810000-Hiawassee	Fodder Creek	6	5	0.982	0.635	0.154	0.635	0.819	-0.348
81	GA2810000-Hiawassee	Sunnyside	6	5	0.982	0.635	0.154	0.635		
82	GA2810000-Hiawassee	Bearmeat Road	6	5	0.982	0.635	0.154	0.635		
83	GA2810000-Hiawassee	Hwy 76/Hwy 288	6	5	0.982	0.635	0.154	0.635		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The 2015 purchased value from GA2810000-Hiawassee was split between those four interconnections.
3. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.
4. Clay County's excess capacity was estimated from their *Draft Report: Cost-Justified Water System Development Fees Report* , Clay County Water and Sewer District, October 2021.

Table B-34a
Walker County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD)			Peak Permitted Withdrawal (MGD-24-hour maximum)[3]	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
				Coke Oven Wells WTP	Kensington Wells WTP	Walker County WTP	Crawfish Spring Lake					
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	2.80	1.00	4.50	4.50	1.02	4.35	13.67	4.50	9.17
	A2. Critical asset failure at largest WTP[2]	0.1	30	2.80	1.00	4.50	4.50	1.02	NA	9.32	0.00	9.32
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	2.80	1.00	4.50	4.50	1.02	4.35	13.67	4.50	9.17
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	2.80	1.00	4.50	4.50	1.02	NA	9.32	0.00	9.32
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source[5]	0.5	1	2.80	1.00	4.50	4.50	1.02	6.75	16.07	0.00	16.07
	D2. Chemical contamination of largest raw water source[5]	0.1	1	2.80	1.00	4.50	4.50	1.02	6.75	16.07	0.00	16.07
E. Full unavailability of major raw water sources due to federal or state government actions	--						Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--						Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	0.05	30	2.80	1.00	4.50	4.50	1.02	NA	9.32	0.00	9.32
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]						Not Applicable					

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Walker County WTP has no backup generator, rendering full capacity loss at the largest WTP.
2. Walker County WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Walker County WTP has three additional wells located at the water treatment plant able to supply 5.9 MGD capacity if Crawfish Spring Lake is contaminated or the dam fails, rendering no capacity loss.
6. Crawfish Spring Lake is in Hydrologic Unit Code-10 "South Chickamauga Creek," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-34b
Walker County Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	9.17	3.65	2.37	1.28	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	9.32	3.65	2.37	1.28	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	9.17	3.65	2.37	1.28	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	9.32	3.65	2.37	1.28	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	16.07	3.65	2.37	1.28	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	16.07	3.65	2.37	1.28	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	9.32	3.65	2.37	1.28	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-34c
Walker County Emergency Scenario Evaluation: 2050

				Peak Day Design Capacity (MGD)			Peak Permitted Withdrawal (MGD-24-hour maximum)[3]					
Risk	**Scenario**	**Relative Liklihood**	**Duration (Days)**	**Coke Oven Wells WTP**	**Kensington Wells WTP**	**Walker County WTP[4]**	**Crawfish Spring Lake**	**Maximum Possible Purchased Water (MGD)**	**Water Storage (MGD)[5]**	**Total Possible Water Supply (MGD)**	**Capacity Loss (MGD)**	**Available Water Supply (MGD)**
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	2.80	1.00	12.00	8.30	1.50	4.35	17.95	0.00	17.95
	A2. Critical asset failure at largest WTP[2]	0.1	30	2.80	1.00	12.00	8.30	1.50	NA	13.60	0.00	13.60
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	2.80	1.00	12.00	8.30	1.50	4.35	17.95	8.30	9.65
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	2.80	1.00	12.00	8.30	1.50	NA	13.60	0.00	13.60
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	2.80	1.00	12.00	8.30	1.50	6.75	20.35	2.40	17.95
	D2. Chemical contamination of largest raw water source	0.1	1	2.80	1.00	12.00	8.30	1.50	6.75	20.35	2.40	17.95
E. Full unavailability of major raw water sources due to federal or state government actions	--						Not Applicable					
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--						Not Applicable					
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	0.05	30	2.80	1.00	12.00	8.30	1.50	NA	13.60	2.40	11.20
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]						Not Applicable					

Notes:

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. Walker County plants to install a new generator which would provide full treatment capacity, rendering no capacity loss.
2. Walker County WTP met chemical and unit process redundancy, rendering no capacity loss at this WTP.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. The QWS indicated upgrading the surface water plant by 7.5 MGD with the ability for a further 3.5 MGD expansion.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Walker County WTP has three additional wells located at the water treatment plant able to supply
5.9 MGD capacity if Crawfish Spring Lake is contaminated or the dam fails, rendering no capacity loss.
6. Crawfish Spring Lake is in Hydrologic Unit Code-10 "South Chickamauga Creek," which is more than 100 square miles.
Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-34d
Walker County Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	17.95	5.00	3.25	1.75	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	13.60	5.00	3.25	1.75	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	9.65	5.00	3.25	1.75	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	13.60	5.00	3.25	1.75	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	17.95	5.00	3.25	1.75	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	17.95	5.00	3.25	1.75	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	11.20	5.00	3.25	1.75	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-34e
Walker County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2] 2015	Individual System Excess Capacity[2] 2050
24	GA2950000-Chickamauga	N. Hwy 341	12	5	3.927	2.538	0.000	1.000	1.025	2.226
25	GA2950000-Chickamauga	Garrets Chapel Road	6	5	1.745	1.128	0.000	0.500		

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Table B-35a
White County Emergency Scenario Evaluation: 2015

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Turner Creek WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Turner Creek Reservoir	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	2.00	2.00	0.79	0.50	3.29	0.00	3.29
	A2. Critical asset failure at largest WTP[2]	0.1	30	2.00	2.00	0.79	NA	2.79	0.00	2.79
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	2.00	2.00	0.79	0.50	3.29	2.00	1.29
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	2.00	2.00	0.79	NA	2.79	0.00	2.79
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	2.00	2.00	0.79	3.35	6.14	2.00	4.14
	D2. Chemical contamination of largest raw water source	0.1	1	2.00	2.00	0.79	3.35	6.14	2.00	4.14
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	0.05	30	2.00	2.00	0.79	NA	2.79	2.00	0.79
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	Not Applicable								

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

1. White County WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. White County WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Turner Creek Reservoir is a dammed creek.
6. Turner Creek Reservoir is in Hydrologic Unit Code-10 "Dicks Creek-Chestatee River," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-35b
White County Deficits: 2015

Risk	Scenario	Available Water Supply (MGD)	2015 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.29	0.63	0.41	0.22	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	2.79	0.63	0.41	0.22	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.29	0.63	0.41	0.22	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	2.79	0.63	0.41	0.22	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	4.14	0.63	0.41	0.22	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	4.14	0.63	0.41	0.22	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	0.79	0.63	0.41	0.22	0.00	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-35c
White County Emergency Scenario Evaluation: 2050

Risk	Scenario	Relative Liklihood	Duration (Days)	Peak Day Design Capacity (MGD) Turner Creek WTP	Peak Permitted Withdrawal (MGD-24-hour maximum)[3] Turner Creek Reservoir	Maximum Possible Purchased Water (MGD)	Water Storage (MGD)[4]	Total Possible Water Supply (MGD)	Capacity Loss (MGD)	Available Water Supply (MGD)
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP[1]	0.5	1	2.00	2.00	1.11	0.50	3.60	0.00	3.60
	A2. Critical asset failure at largest WTP[2]	0.1	30	2.00	2.00	1.11	NA	3.11	0.00	3.11
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	0.1	1	2.00	2.00	1.11	0.50	3.60	2.00	1.60
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	1.0	3	2.00	2.00	1.11	NA	3.11	0.00	3.11
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	0.5	1	2.00	2.00	1.11	3.35	6.45	2.00	4.45
	D2. Chemical contamination of largest raw water source	0.1	1	2.00	2.00	1.11	3.35	6.45	2.00	4.45
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable								
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment[5]	0.05	30	2.00	2.00	1.11	NA	3.11	2.00	1.11
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought[6]	Not Applicable								

Notes:

ADD - average daily demand
MGD - million gallons per day
NA - not applicable
QWS - qualified water system
WTP - water treatment plant

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

1. White County WTP has a backup generator able to supply full treatment capacity, rendering no capacity loss.
2. White County WTP met chemical and unit process redundancy, rendering no capacity loss.
3. For surface water supply, the smaller of the peak day design capacity and the peak permitted withdrawal value was selected for the total possible water supply calculation.
4. Scenarios A1 and B include treated water storage; Scenarios D1 and D2 include raw (non-reservoir) and treated water storage.
5. Turner Creek Reservoir is a dammed creek.
6. Turner Creek Reservoir is in Hydrologic Unit Code-10 "Dicks Creek-Chestatee River," which is more than 100 square miles.

Relative liklihood scale: 1 = high; 0.5 = medium; 0.1 = low; 0.05 = negligible

Table B-35d
White County Deficits: 2050

Risk	Scenario	Available Water Supply (MGD)	2050 - Immediate Reliability Target			Total Demand Deficit (MGD)	65% ADD Deficit (MGD)	35% ADD Deficit (MGD)
			Total Demand (MGD)[1]	65% ADD (MGD)	35% ADD (MGD)			
A. Failure of largest water treatment facility	A1. Power supply failure of largest WTP	3.60	1.57	1.02	0.55	0.00	0.00	0.00
	A2. Critical asset failure at largest WTP	3.11	1.57	1.02	0.55	0.00	0.00	0.00
B. Short-term catastrophic failure of a water distribution system	Critical asset failure (transmission main)	1.60	1.57	1.02	0.55	0.00	0.00	0.00
C. Short-term contamination of a water supply within distribution system	Contamination of distribution system triggers issuance of boil water notice	3.11	1.57	1.02	0.55	0.00	0.00	0.00
D. Short-term contamination of a raw water source	D1. Biological contamination of largest raw water source	4.45	1.57	1.02	0.55	0.00	0.00	0.00
	D2. Chemical contamination of largest raw water source	4.45	1.57	1.02	0.55	0.00	0.00	0.00
E. Full unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
F. Limited or reduced unavailability of major raw water sources due to federal or state government actions	--	Not Applicable						
G. Failure of an existing dam that impounds a raw water source	Dam failure for largest impoundment	1.11	1.57	1.02	0.55	0.46	0.00	0.00
H. Water supply reduction due to drought	Raw water supply available is 40% of ADD due to drought	Not Applicable						

Notes:

ADD - average daily demand
MGD - million gallons per day
QWS - qualified water system
WTP - water treatment plant

1. Total demand (withdrawal plus purchases) is defined the same as 100% ADD.

Prepared by: LCT 09/13/21
Checked by: GJH 09/20/21

Table B-35e
White County Interconnections

Existing Incoming Interconnections

Number	System	Description	Diameter (in)	Maximum Velocity (fps)[1]	Maximum Flow (cfs)	Maximum Flow (MGD)	Capacity Already Purchased (MGD)	Maximum Possible Purchased Water (MGD)	Individual System Excess Capacity[2]	
									2015	2050
28	GA3110000-Cleveland	Intersection of Hwy 129 North and Claude Sims Road	6	5	0.982	0.635	0.000	0.635	0.155	0.471
29	GA3110000-Cleveland	Intersection of Hwy 129 South and Westmoreland Road	3	5	0.245	0.159	0.000	0.159		
30	GA3110000-Cleveland	Jess Hunt Road (near Seaborn Drive)	6	5	0.982	0.635	0.000	0.635		
84	GA3110000-Cleveland	2578 Helen Hwy	6	5	0.982	0.635	0.000	0.635		
85	GA3110000-Cleveland	374 Henry Nix Road	6	5	0.982	0.635	0.000	0.635		
86	GA3110001-Helen	Helen, GA	6	5	0.982	0.635	0.000	0.635	unknown	unknown

Prepared by: LCT 09/10/21
Checked by: GJH 09/20/21

Notes:
in - inches
fps - feet per second
cfs - cubic feet per second
MGD - million gallons per day

1. The maximum velocity is assumed to be 3 fps for pipe diameters greater than or equal to 16 inches and 5 fps for pipe diameters less than or equal to 12 inches.
2. The maximum possible purchased water is limited by the provider's ADD, permit limits, and their peak design capacity. The provider's excess capacity is listed here, if available, and can also be found in Table 3-1.

Appendix C: Sensitivity Analysis

Contents

Acronyms

GEFA	Georgia Environmental Finance Authority
QWS	Qualified Water System(s)

1.0 Introduction

This appendix describes the sensitivity analysis that was conducted to test the influence of criterion weightings on the initial manual rank outcome.

2.0 Sensitivity Analysis

As described in Section 7.1 of the report, scores were assigned either 1, 2, 3, or 4 using a methodology shown in Table 7-1. Criterion weights were initially assigned either 1, 2, or 3 based on professional judgement.

To conduct the sensitivity analysis, scenarios were considered to test the influence of criterion weightings on the rank outcome. In the case of a tie, the absolute score was considered, and in the case of a further tie, the lower cost per individual supplied broke the tie. First, all criteria were assigned the highest weight (3). The effect of this weighting adjustment is equivalent to the absolute score because although it amplified score values, the rank outcome was the same. Second, one of the eight criteria was assigned the highest weight (3) with the remaining seven criteria assigned the lowest weight (1). The effects of these weighting variations are described below:

1. Systems Benefitted weight = 3; all other criteria weights = 1
    a. Project 5 improved rank by one rank.
    b. Project 11 improved rank by three ranks.
    c. Project 10 improved rank by four ranks.
    d. Projects 2 and 9 each improved rank by seven ranks.
    e. Project 7 worsened rank by one rank.
    f. Projects 12, 14, and 15 each worsened rank by three ranks.
    g. Projects 3, 6, and 13 each worsened rank by four ranks.
    h. All other projects maintained rank.
    i. Interpretation: this weighting adjustment yielded a significant effect. Improved ranks were given to projects that mutually benefit two QWS, except for Project 7, which worsened rank. Project 7's ranking is likely driven by other factors.
2. Population Benefitted weight = 3; all other criteria weights = 1
    a. Projects 4 and 8 each improved rank by two ranks.
    b. Projects 10 and 11 each improved rank by three ranks.
    c. Project 9 improved rank by seven ranks.
    d. Project 15 worsened rank by one rank.
    e. Projects 7 and 13 each worsened rank by two ranks.
    f. Project 3 worsened rank by three ranks.
    g. Project 6 worsened rank by four ranks.
    h. Project 14 worsened rank by five ranks.
    i. All other projects maintained rank.
    j. Interpretation: this weighting adjustment yielded a significant effect. Higher priority is given to projects that benefit larger populations, and projects generally adjusted rank according to this interpretation.
3. Critical Scenario Duration (days) weight = 3; all other criteria weights = 1
    a. Projects 5 and 8 each improved rank by one rank.

b. Project 11 improved rank by four ranks.
c. Project 2 improved rank by five ranks.
d. Project 9 improved rank by six ranks.
e. Projects 4 and 7 each worsened rank by one rank.
f. Projects 13 and 15 each worsened rank by three ranks.
g. Project 12 worsened rank by four ranks.
h. Project 6 worsened rank by five ranks.
i. All other projects maintained rank.
j. Interpretation: this weighting adjustment yielded a significant effect. Higher priority is given to projects that serve a longer critical scenario duration. Excluding Project 10, which maintained rank, projects that received a score of 3 worsened rank according to this interpretation.

4. Added Capacity as a Percent of Total Demand (%) weight = 3; all other criteria weights = 1
    a. Projects 3 and 11 each improved rank by three ranks.
    b. Project 9 improved rank by five ranks.
    c. Project 2 improved rank by eight ranks.
    d. Projects 5, 8, 10, and 15 each worsened rank by one rank.
    e. Project 4 worsened rank by two ranks.
    f. Projects 6 and 12 each worsened rank by four ranks.
    g. Project 13 worsened rank by five ranks.
    h. All other projects maintained rank.
    i. Interpretation: this weighting adjustment yielded a significant effect. Higher priority is given to projects that yield a higher added capacity as a percent of total demand. Excluding Project 14, which maintained rank, projects that received a score of 3 or higher improved rank according to this interpretation.
5. Cost ($) weight = 3; all other criteria weights = 1
    a. Projects 5 and 13 each improved rank by one rank.
    b. Project 10 improved rank by two ranks.
    c. Projects 2 and 9 each improved rank by three ranks.
    d. Projects 4 and 7 each worsened rank by one rank.
    e. Project 14 worsened rank by two ranks.
    f. Projects 12 and 15 each worsened rank by three ranks.
    g. All other projects maintained rank.
    h. Interpretation: this weighting adjustment yielded a noticeable effect. Priority is given to less expensive projects. Some projects adjusted rank order according to this interpretation, but for others, there are likely other factors driving rank order.
6. Potential Environmental Impacts weight = 3; all other criteria weights = 1
    a. Projects 5, 12, and 14 each improved rank by one rank.
    b. Project 8 improved rank by three ranks.
    c. Project 7 worsened rank by one rank.
    d. Project 11 worsened rank by two ranks.
    e. Project 10 worsened rank by three ranks.
    f. All other projects maintained rank.
    g. Interpretation: this weighting adjustment yielded a small effect and is likely driven by other factors.

7. Potential System and Community Impacts weight = 3; all other criteria weights = 1
    a. Project 8 improved rank by one rank.
    b. Projects 4, 9, 12, and 14 each improved rank by two ranks.
    c. Project 11 improved rank by three ranks.
    d. Projects 5, 7, 10, and 13 each worsened rank by one rank.
    e. Project 15 worsened rank by two ranks.
    f. Projects 3 and 6 each worsened rank by three ranks.
    g. All other projects maintained rank.
    h. Interpretation: this weighting adjustment yielded a noticeable effect. Priority is given to projects with fewer system and community impacts. Many projects adjusted rank order according to this interpretation. But for projects with scores including and between 2 and 2.67, some improved rank while others worsened rank. For these projects, there are likely other factors driving rank order.
8. Excess Capacity Index weight = 3; all other criteria weights = 1
    a. Projects 5, 9, and 13 each improved rank by one rank.
    b. Project 2 and 10 each improved rank by two ranks.
    c. Project 11 improved rank by three ranks.
    d. Project 7 worsened rank by one rank.
    e. Projects 3, 4, and 14 each worsened rank by two ranks.
    f. Project 15 worsened rank by three ranks.
    g. All other projects maintained rank.
    h. Interpretation: this weighting adjustment yielded a noticeable effect. Higher priority is given to projects that benefit QWS with lower relative excess capacities. Projects generally adjusted rank according to this interpretation, but there are likely other factors driving rank order.

The sensitivity analysis results demonstrate that criteria are generally sensitive to weighting. Regardless, initially assigned weights were retained because sensitivity analysis results are meant to be informative rather than correctional.

wood.