



2017 Alabama Surface Water Assessment Report

by the Alabama Office of Water Resources
A division of the Alabama Department
of Economic & Community Affairs

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AN ASSESSMENT OF THE SURFACE WATER RESOURCES OF ALABAMA

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Alabama Office of Water Resources, a division of the
Alabama Department of Economic and Community Affairs

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Foreword

OFFICE OF THE GOVERNOR

KAY IVEY
GOVERNOR

STATE OF ALABAMA

ALABAMA DEPARTMENT OF ECONOMIC
AND COMMUNITY AFFAIRS**KENNETH W. BOSWELL**
DIRECTOR

Water is a vital natural resource in Alabama. From the rolling expanse of the Tennessee River to the beaches along the beautiful Gulf of Mexico, water is what drives Alabama's economic vitality, quality of life, natural resources diversity and makes the state a great place to live, work and raise a family. And to help better understand the condition of this vital resource, the Alabama Department of Economic and Community Affairs has assessed Alabama's surface water resources and the demands being placed upon these resources to ensure water will be readily available for generations to come.

The *Assessment of the Surface Water Resources of Alabama* provides a comprehensive report of both the availability of the surface waters of the state and the current (using 2010 baseline data) and projected (2040) water withdrawal and consumptive demands that are estimated to be placed upon them. The report provides monthly and annual summaries of the amount of water available and used in each subbasin in the state, as well as hydrologic summaries for over 200 points of interest in our rivers and streams. This report is the most complete summary of surface water availability and water use ever produced for Alabama.

The staff in ADECA's Office of Water Resources (OWR) spent countless hours collecting, analyzing, and summarizing the water flow and use data to develop this report. We appreciate the numerous organizations, public water systems, and individuals who provide information to OWR under the Alabama Water Use Reporting Program each year. In addition, the process of developing this report has resulted in several new analytical approaches and techniques for the generation of statistical summaries that will support the continuation of these efforts well into the future. We are proud of this report, and I hope you find it to be informative and useful.

The mission of ADECA is to build stronger communities, and water assessment and availability play an important role in supporting the future growth of Alabama.

Respectfully,

Kenneth W. Boswell
Director

Abbreviations and Acronyms

Term	Meaning
ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
APC	Alabama Power Company
ASCE	American Society of Civil Engineers
AUWRC	Auburn University Water Resources Center
AVG	Average
AWRC	Alabama Water Resources Commission
AWURP	Alabama Water Use Reporting Program
CBER	University of Alabama Center for Business and Economic Research
CFS	Cubic Feet per Second
COU	Certificate of Use
CWRE	Troy University Center for Water Resources Economics
DMR	Discharge Monitoring Report
EPA	U.S. Environmental Protection Agency
GDP	Gross Domestic Product
GPC	Georgia Power Company
GW	Groundwater
MGD	Million Gallons per Day
mi ²	Square Miles
MOR	Monthly Operating Report
NPDES	National Pollutant Discharge Elimination System
OWR	Office of Water Resources
PSEC	PowerSouth Energy Cooperative
RND	Relative Net Demand
SW	Surface Water
TVA	Tennessee Valley Authority
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

Abstract

This report provides an assessment of current (2010) and projected (2040) water withdrawals and consumptive water use (or net demands) in Alabama as well as a comparison of those consumptive uses to summaries of the state's surface-water resources. Water withdrawals and consumptive uses were estimated for the following water use sectors: public water supply, agriculture (aquaculture, golf courses, irrigation, and livestock), and industrial, thermoelectric, and mining.

This surface water-availability assessment report by the Office of Water Resources (OWR) consists of four primary elements:

1. An assessment of the 2010 water withdrawals and returns and resulting consumptive use in the state;
2. An estimate of projected 2040 water withdrawals and returns and resulting consumptive use in the state;
3. An assessment of streamflows throughout the state; and,
4. A comparison between both the 2010 and projected 2040 consumptive water use and the assessment of streamflows throughout the state.

Consumptive water use for 2010 in Alabama was estimated to be 84 million gallons per day (MGD) with the highest consumptive use occurring in the Mulberry Fork subbasin (03160109; 96 MGD, indicating more water was withdrawn than returned) and the lowest occurring in the Upper Black Warrior subbasin (03160112; -97 MGD, indicating that more water was returned than withdrawn). Consumptive water use is estimated to increase from 84 MGD in 2010 to 240 MGD in 2040 in Alabama with the highest consumptive use also occurring in the Mulberry Fork subbasin (03160109; 130 MGD) and the lowest occurring in the Upper Black Warrior subbasin (03160112; -109 MGD).

The relative net demand (RND) for each subbasin was developed by calculating the ratio of the monthly, seasonal, and annual net demands in relation to the corresponding monthly, seasonal, and annual flow statistics in those subbasins. Results of the comparisons indicated that nearly all the monthly 2010 and 2040 net demand value were less than the minimum monthly streamflows for each subbasin. Monthly values of the 2010 minimum relative net demand ratios ranged from -0.50 in the Locust Fork subbasin (03160111) to 1.47 in the Sipsey Fork subbasin (03160110). Based on the estimated projected demands, monthly 2040 minimum relative net demand ratios ranged from -0.52 in the Locust Fork subbasin (03160111) to 1.47 in the Sipsey Fork subbasin (03160110). Similarly, when the net demands were compared with average monthly streamflows, monthly values of the 2010 average relative net demand ratios ranged from -0.06 in the Locust Fork subbasin (03160111) to 0.16 in the Escatawpa subbasin (03170008). Monthly 2040 average relative net demand ratios based on average streamflows ranged from -0.06 in the Locust Fork subbasin (03160111) to 0.18 in the Escatawpa subbasin (03170008).

The results of OWR's water assessment analysis show that for a very large part of the state, consumptive use is equal to a very low percentage of streamflow and considerable increases in

consumptive use can be sustained. However, the factors affecting or limiting water availability may not be due to limited water resources but limitations of the existing local or regional water supply systems that include reservoirs, wells, pipelines, as well as the suitability of the water for its intended use. The water assessment analysis underscores the need for continued funding support to conduct water withdrawal and consumption assessments using data and information from the OWR Alabama Water Use Reporting Program (AWURP). The AWURP is the state's most comprehensive data repository for water-use information and is vital to the ability to connect the results of both the surface and groundwater capacity assessments with the ability to quantify the ability of individual subbasins to meet the current and future demands placed upon them.

This effort is a vital aspect of understanding Alabama's surface water resources including the estimation of surface-water withdrawals, returns, and net water availability in each subbasin. Such studies are also needed to help guide potential enhancements to state water policies and water resource management activities as well as indicate where additional focus may be needed in the future.

Introduction

Alabama's water resources are important for economic growth and sustainability and quality of life. The rivers, lakes, and streams in the state help sustain communities, provide support for industries and jobs, generate power, irrigate crops, provide critical transportation avenues and links, maintain wildlife, and provide many opportunities for recreation. Management of these water resources needs to be based on periodic comprehensive assessments of the amount of water available in the state.

Since 1950, when the U.S. Geological Survey (USGS) first conducted water-use compilations, important changes in water use have occurred over the years in Alabama. These changes have been driven by population growth, economic and industrial development, changes in technology, and compliance with state and federal laws. In the last few years there has also been an increased awareness of the value of water efficiency and conservation that has resulted in more efficient use of water from the rivers, lakes, reservoirs, and groundwater in Alabama.

With the passage of the Alabama Water Resources Act in 1993, the State of Alabama established the Office of Water Resources (OWR) within the Alabama Department of Economic and Community Affairs (ADECA). Under the Act, the state also formalized a water-use registration, reporting, and data-collection program that has improved the accuracy and accounting of water use throughout Alabama. Administered by OWR, the Alabama Water Use Reporting Program (AWURP) has become the repository of water-use data for the state. The AWURP provides the framework and structure for the collection of water withdrawal information. Specifically, the AWURP requires that all public water systems as well as non-public (commercial, industrial, mining, and thermoelectric-power facilities) and irrigation water users with a capacity to withdraw 100,000 gallons of water per day or greater obtain a Certificate of Use (COU). Every year, each COU holder is required to report monthly water usage by March of the following year.

Although only established in 1993, OWR provided data for the 1995 USGS water-use compilation. A more complete reporting of public, non-public, and irrigation water-use entities

improved the 2000 estimate of water use for Alabama. Both these early efforts only included data at the county level. Since 2000, AWURP has been further supplemented by data from other governmental and non-governmental agencies, greatly improving the comprehensiveness and accuracy of the water-use estimates which has allowed the development of information at the eight-digit Hydrologic Unit Code (subbasin) level. OWR took the lead in publishing water-use compilations for both the “Estimated Use of Water in Alabama in 2005” report (the 2005 Report) and the most recently published summary, the “Estimated Use of Water in Alabama in 2010” report (the 2010 Report).

This assessment of current and future water withdrawals and consumptive use in Alabama will focus on analyses at the subbasin level. A listing of each of the subregions and subbasins is included in Appendix A, table A-1. The demand data is based primarily on information from that most recent water-use compilation, the 2010 Report. Additional data was analyzed from the National Pollutant Discharge Elimination System (NPDES) permitted discharge data, reported to ADEM and EPA, to assist in the development of water return and consumption estimates.

Estimates of projected water withdrawals and consumptive use for the year 2040 were developed to help assess how and where current conditions may change in the future. Water withdrawals and consumptive use were estimated for public water supply, agriculture (aquaculture, golf courses, irrigation, and livestock), and industrial, thermoelectric, and mining water use. The 2040 public water-supply projections were based on population projection estimates developed by the University of Alabama’s Center for Business and Economic Research (CBER) (Appendix B) and 2010 public water supply per capita numbers (the 2010 Report). Agricultural water withdrawal estimates were developed by the Auburn University Water Resources Center (AUWRC) (Appendix C) while the industrial, thermoelectric, and mining water withdrawal estimates were developed by the Troy University Center for Water Resource Economics (CWRE) (Appendix D).

A key aspect of an assessment of surface-water availability is information regarding the characteristics of streamflows in subbasins. These streamflow characteristics are important in evaluating Alabama’s existing and future uses and availability of surface water in the state. This information is also necessary for the design and operation of reservoirs and for management of water supplies for drinking water, commercial, industrial, irrigation, and thermoelectric power uses as well as instream uses such as navigation, recreation, aquatic habitat, and water quality. Statistical analysis and summaries of streamflow characteristics for 201 gaged and ungaged locations in the state were developed and include mean monthly and mean annual streamflow; duration of daily mean flow; and the magnitude and frequency of monthly and annual low flows. This information was then used to develop surface-water availability characteristics at the subbasin level for almost every subbasin in Alabama. The comparisons of flows and the 2010 and projected 2040 water demand estimates resulted in the development of relative net demand (RND) ratios of monthly flow characteristics and net water consumption estimates for subbasins in Alabama.

Purpose and Scope

This report will present water-use estimates for 2010 and water-use projections for 2040 by source of supply, water-use sector, and hydrologic subregion and subbasin (figures 1 and 2) for Alabama. Information and data for three sectors of water use—public supply, agriculture

(aquaculture, golf courses, irrigation, and livestock), and industrial, thermoelectric, and mining—are presented for 2010 and 2040. Estimates of water withdrawn from surface water and groundwater sources, estimates of consumptive use, and estimates of public-supply wastewater releases and thermoelectric power and industrial discharges are presented for 2010 and 2040.

This report will also present summaries of streamflow by subbasin for the state. This report will describe OWR’s methodologies, statistical analysis and summaries of streamflow characteristics for 201 gaged and ungaged locations in the state. Streamflow characteristics that were estimated and calculated for these sites included mean monthly and mean annual streamflow; duration of daily mean flow; and the magnitude and frequency of monthly and annual low flows. These summaries of streamflow information were compared to current water demand information for subbasins in the state as well as projected future water demands. The comparisons of flows and demands were used to calculate RND ratios to describe the amount of surface water available in the subbasins.

This effort is a vital aspect of understanding Alabama’s surface water resources including the estimation of surface-water withdrawals, returns, and net water availability in each subbasin. Such studies are also needed to help guide potential enhancements to state water policies and water resource management activities as well as indicate where additional focus may be needed in the future.

Hydrologic Setting

The rainfall that replenishes the rivers (figure 3) and aquifers (figure 4) in Alabama varies annually, seasonally, and geographically. Local geology, geomorphology, and topography determine the short-term and long-term groundwater and surface-water availability within a subbasin. The mean annual rainfall for Alabama is 55.09 inches (1895 to 2016 period of record) ranging from lows of 35.39 inches in 1954 and 37.87 inches in 2007 to highs of 75.08 inches in 1929 and 74.77 inches in 1975 (National Oceanic and Atmospheric Administration, 2017).

The Tennessee and Mobile Rivers, along with numerous minor streams, provide water to Alabama residents for a variety of offstream and instream uses (Lineback, 1973). The Tennessee River flows in a westerly direction through the Cumberland Plateau, the Highland Rim, and a small part of the East Gulf Coastal Plain (figures 3 and 5). Total drainage area of the Tennessee River in Alabama is roughly 7,500 square miles (mi²) (Alabama Department of Economic and Community Affairs, Office of Water Resources, 2002). The Tennessee River is the only source of water used to supply communities such as Decatur and Sheffield and supports robust thermoelectric power and industrial uses. Wells and springs within the Cumberland Plateau and Highland Rim physiographic provinces (figures 4 and 5) provide some limited groundwater for aquaculture, industrial, irrigation, mining, livestock, and self-supplied residential uses (Baker, 1989; Baker and Moser, 1989; Hunter, 1991; Mooty and Richardson, 1998). Most of the groundwater within the Cumberland Plateau and Highland Rim physiographic provinces is withdrawn for public supply.

The Lower Tombigbee River and its tributaries, the Upper Tombigbee and Black Warrior River, flow southward and join with the Alabama River and its tributaries, the Cahaba, Coosa, and Tallapoosa Rivers, to form the Mobile River (figure 3). The rivers traverse the East Gulf Coastal

Plain, Cumberland Plateau, Alabama Valley and Ridge, and Piedmont Upland and drain 32,207 mi² in Alabama. Supplemented by groundwater, the rivers provide water to communities such as Birmingham, Mobile, Montgomery, and Tuscaloosa. Groundwater use is greatest in the East Gulf Coastal Plain with some locally productive aquifers in the Piedmont Upland, Alabama Valley and Ridge, and Cumberland Plateau areas that are used for various purposes (Journey and Atkins, 1997; Kidd and others, 1997; Mooty and Kidd, 1997; Robinson and others, 1997).

The Conecuh, Yellow, Pea, and Choctawhatchee Rivers, which originate in Alabama, and the Chattahoochee River, which originates in Georgia, traverse southeastern Alabama. Groundwater from the relatively unconsolidated Mesozoic and Cenozoic sediments underlying the Coastal Plain (Chapman and Peck, 1997; Mayer, 1997; DeJarnette, 1989) is the source of public supply for most southeastern Alabama communities, including Andalusia and Dothan; however, some surface water is used for aquaculture, industry (Conecuh River), irrigation, livestock, and mining. The cities of Opelika, Phenix City, Smiths Station, and the East Alabama Water, Sewer and Fire Protection District, which serves Chambers County, withdraw water from the Chattahoochee River.

Figure 1. Map of counties and subregions in Alabama.

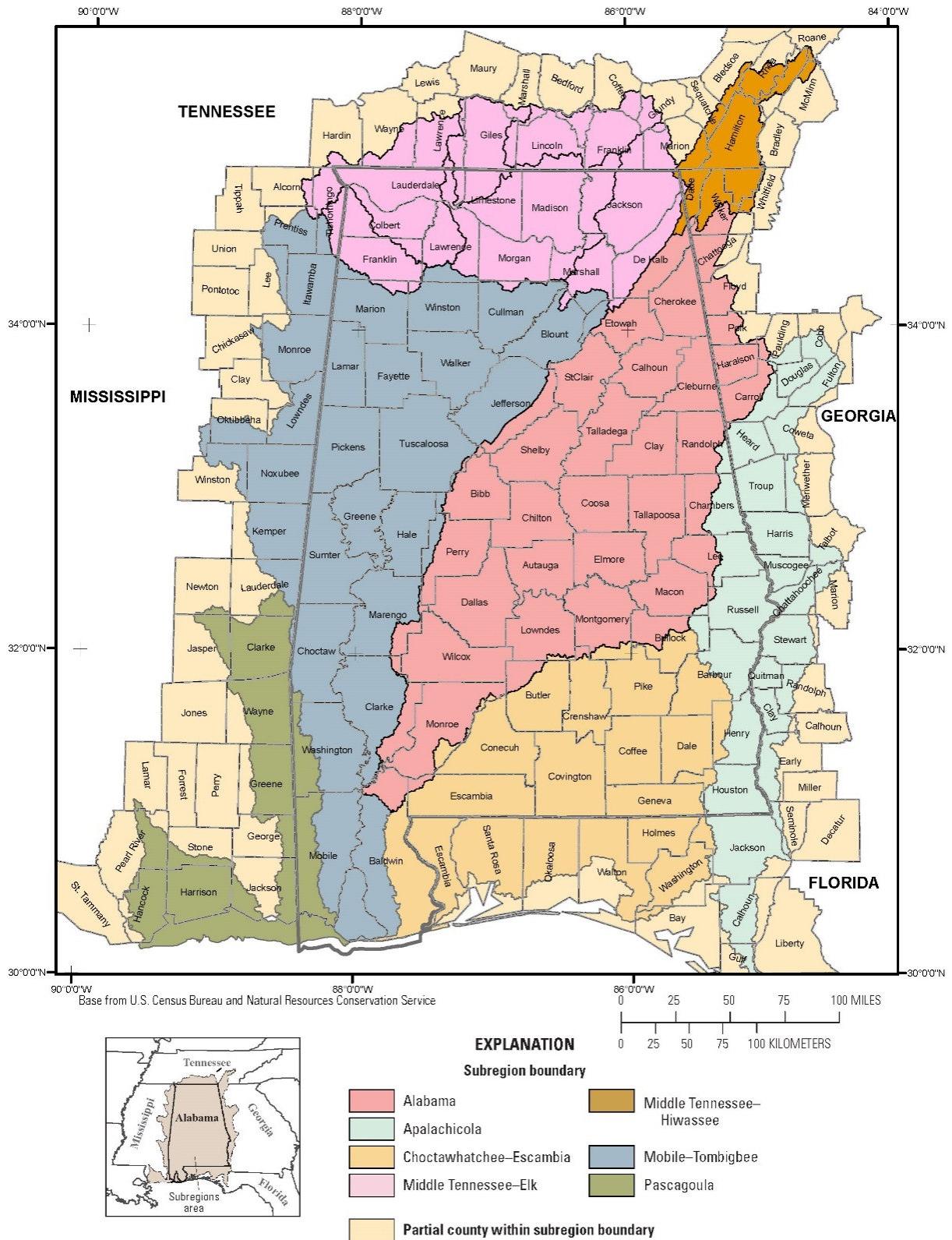


Figure 2. Map of subregions and subbasins in Alabama.

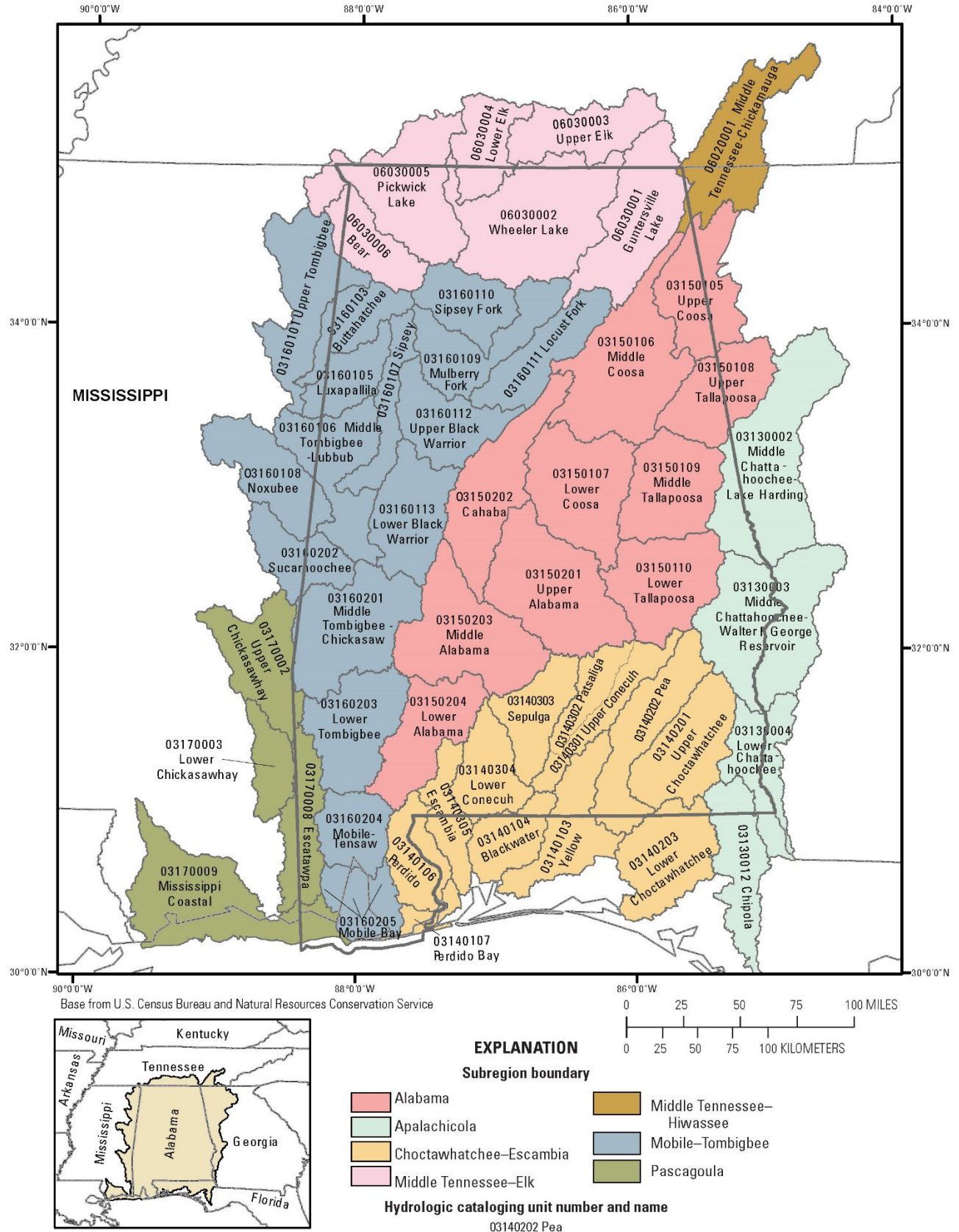


Figure 3. Map of major rivers and tributaries in Alabama.

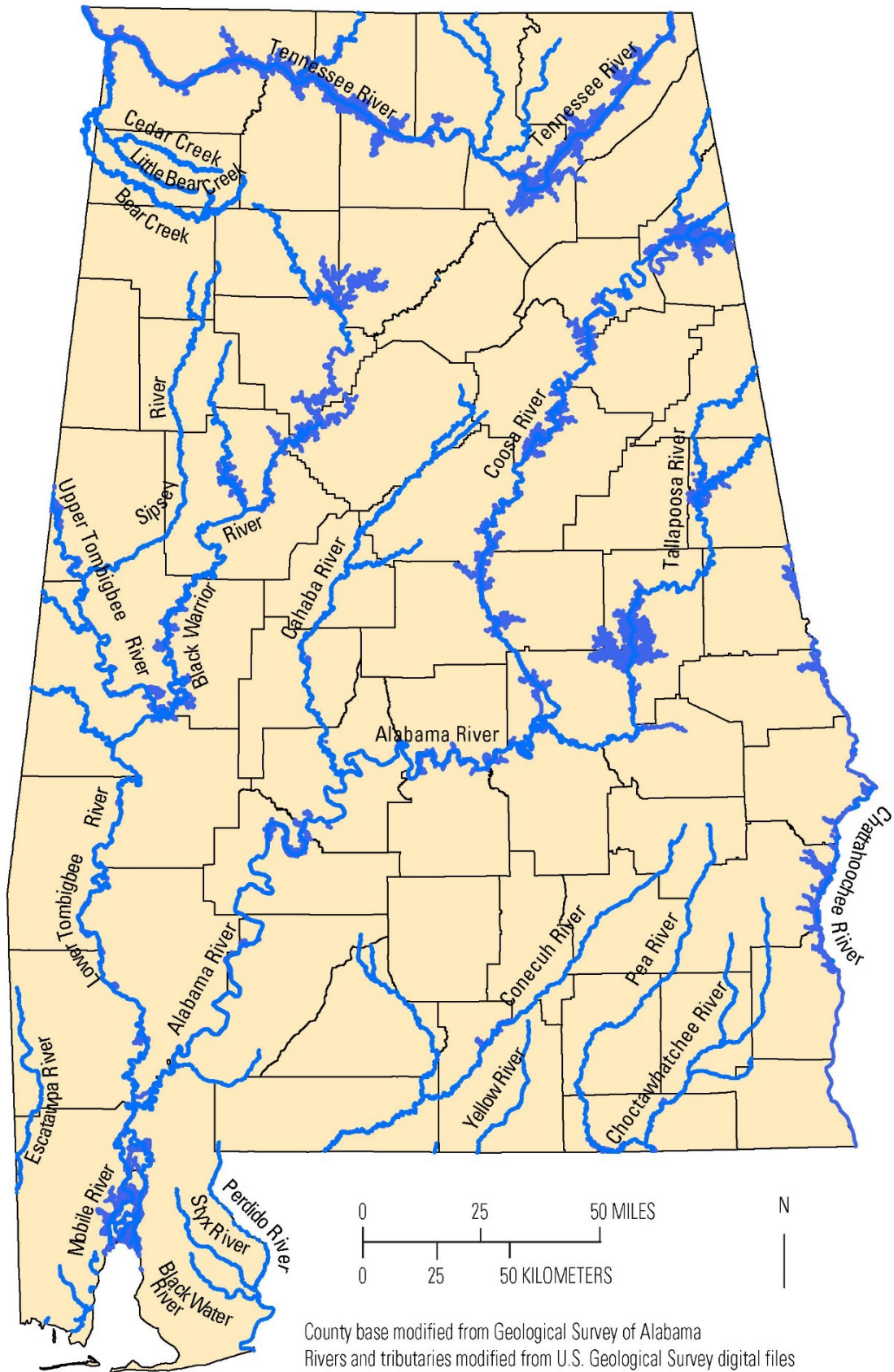
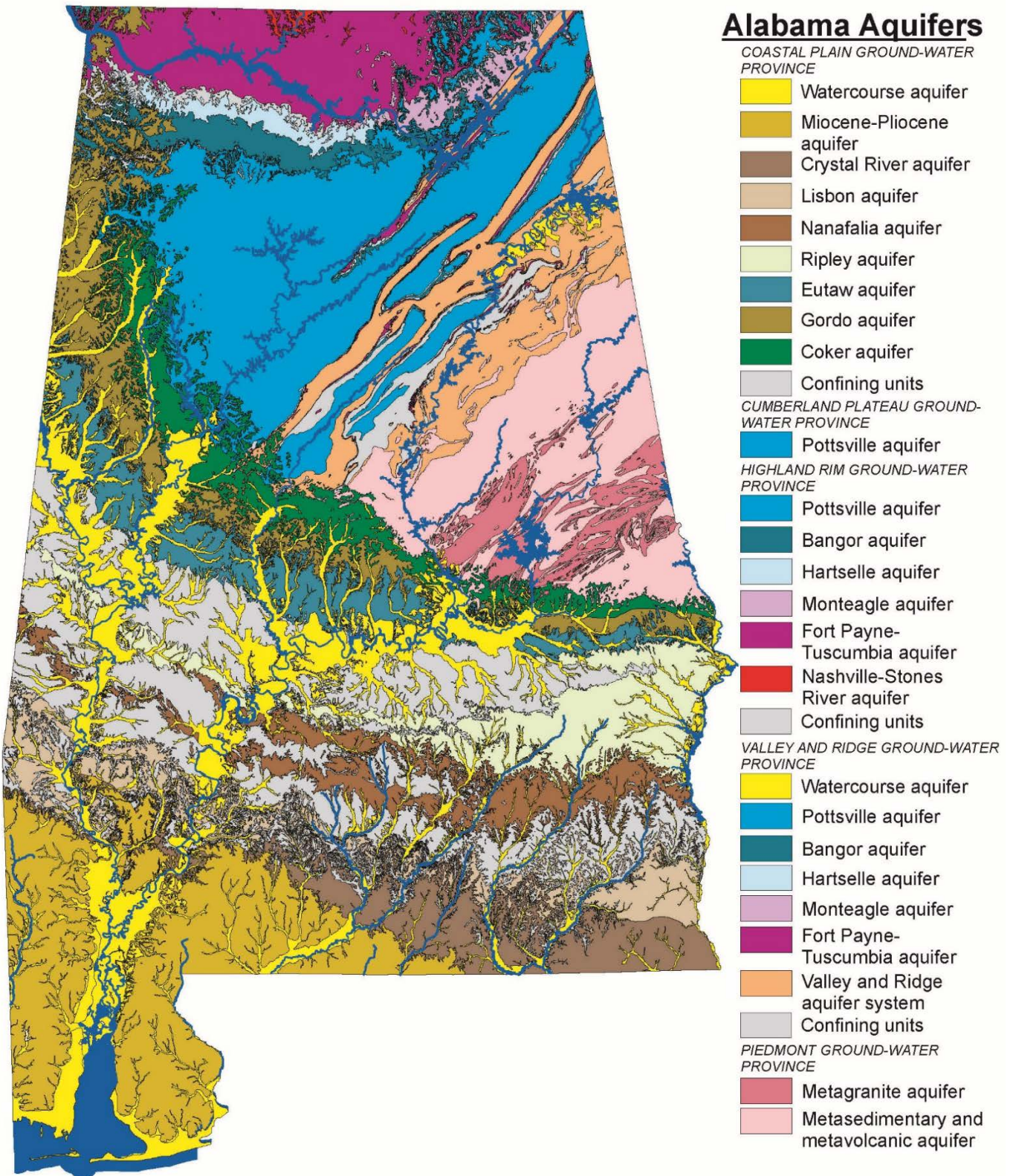
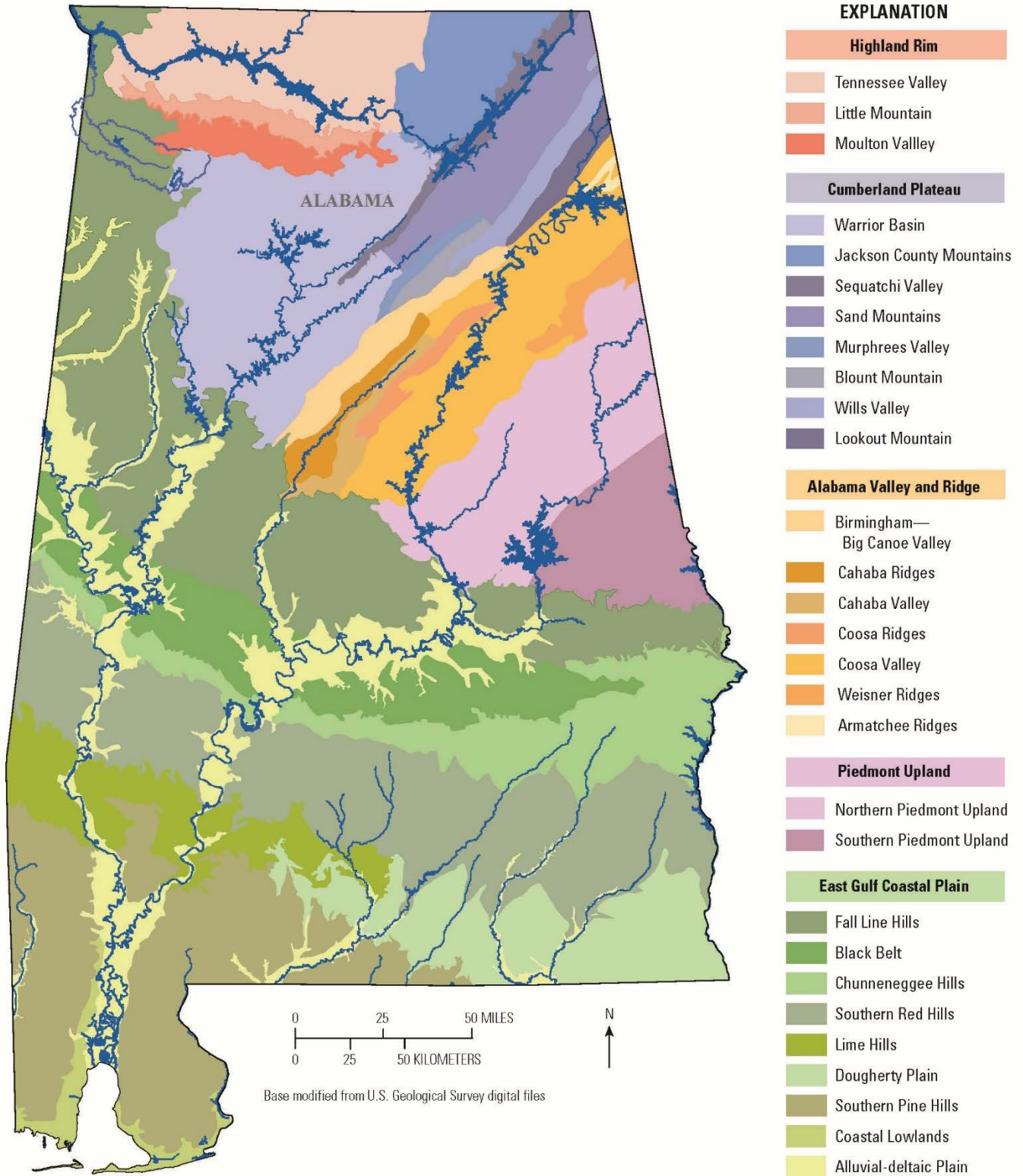


Figure 4. Map of principal aquifers in Alabama.



Alabama Aquifer Map provided by Geological Survey of Alabama

Figure 5. Map of Alabama physiography (provided by Geological Survey of Alabama, 2014).



Acknowledgements

The report would not have been possible without the numerous public water systems, businesses, organizations, and individual holders of Certificates of Use who provide information to OWR under the Alabama Water Use Reporting Program each year. The water-use information provided under this program allows OWR to maintain the most complete information in the state on where, how, when, and how much water is used monthly. We appreciate all the efforts COU holders expend to provide these annual reports to OWR.

The authors would also like to thank the personnel from the state agencies and universities in Alabama that contributed to this report. This included the University of Alabama, Auburn University, Troy University, and the Geological Survey of Alabama. In addition, the authors also wish to express appreciation to ADECA's Communications and External Affairs Division for assistance with the report review and publication.

Water Use Demand Data Methodologies and Summaries

In the "Estimated Use of Water in Alabama in 2010" report (Harper and Turner, 2014) (hereafter referred to as the 2010 Report), water withdrawal data was compiled for eight water use sectors by subbasins. For the purposes of this analysis, some water use sectors were consolidated to allow for consistent comparisons between 2010 and 2040. Site-specific data were used as a basis for estimates for public supply, industrial, thermoelectric, golf course, nursery, and sod irrigation. Aggregated county level data were used as a basis for estimates for residential, crop irrigation, livestock, aquaculture, and mining. This section contains detailed descriptions of the methodology and sources of data use for determining the total population, public-supply and residential, agriculture (aquaculture, golf courses, irrigation, and livestock), and industrial, thermoelectric, and mining withdrawals. While the 2010 Report provided the baseline water withdrawal and use data, additional analyses such as water return estimates and consumptive use summaries were conducted in support of this report.

Water withdrawals are primarily expressed in terms of million gallons per day (MGD) or, when compared to streamflows, in terms of cubic feet per second (CFS). In the tables, withdrawal estimates are presented in two decimal places. In the report, water withdrawals are reported as whole numbers unless the use of decimals is needed to improve clarity. Percentages are based on the 2 digit values in the tables and are expressed as whole numbers. All values are rounded independently; therefore, the sums of individually rounded numbers may not equal the totals given in this report. Also, due to different rounding methods, additional data, sector consolidations, and variations in methodologies, the numbers presented in this report may not equal the numbers previously published in the 2010 Report.

Total Population 2010 to 2040

The University of Alabama Center for Business and Economic Research (CBER) submitted a report to OWR that provided population projections and economic forecasts thru 2040 for Alabama's 67 counties as well as 1,181 census tracts as defined in the 2010 Census (Addy and

others, 2014) (Appendix B). Both the population and economic forecasts were produced by models developed and maintained by the CBER in the University of Alabama's Culverhouse College of Commerce.

The census tract information provided by CBER was then aggregated and summarized for each of the 53 subbasins by OWR. This aggregation was accomplished by approximating the subbasin delineations of census tracts that were separated by subbasin boundaries and summarize the partial tract elements for each of the 53 individual subbasins. This process provided the most accurate technique for approximating subbasin populations in accordance with the specific forecast time periods.

Public-Supply and Residential Withdrawal Estimating Methodologies

Public Supply and Residential – 2010 Methodology

The public-supply and residential water withdrawal estimates for 2010 were taken from the 2010 Report. However, the 2010 Report did not include monthly data so, additional analyses were performed to develop monthly summaries of water withdrawals. For public supply, sector estimates were made for groundwater and surface-water withdrawals at the subbasin levels. Public-supply withdrawal estimates were primarily based on site-specific monthly reported data. Water withdrawals are metered and reported as monthly average daily rates of withdrawal to OWR through AWURP reports, and to the Alabama Department of Environmental Management (ADEM) through monthly operation reports (MORs). Water sold to or purchased from other public suppliers was not included in this study.

Self-supplied residential withdrawals are not reported as part of the AWURP and are not collected by any other state or federal agency. Since this data is unavailable, self-supplied residential withdrawals estimated at the county level in the 2010 Report were aggregated to the subbasin level.

Public Supply – 2040 Methodology

The public-supply water withdrawals for 2040 were estimated using the estimated public-supply per capita developed in the 2010 Report at the subbasin level and applying the per capita data to the estimated 2040 population estimated in the CBER report. It was assumed that by 2040 all the State's population would be served by public supply, therefore eliminating the "Residential" sector from the report for 2040.

To develop the monthly water use estimates for 2040, the 2010 monthly data was analyzed. These monthly subbasin summaries for groundwater and surface-water withdrawals were analyzed and the percentage of annual average withdrawal was estimated for each month. The 2040 estimated public supply average for each subbasin was multiplied by each monthly percentage of annual average of the 2010 data to estimate a monthly 2040 water withdrawal projection for each subbasin.

Agriculture Withdrawal Methodologies

Agriculture – 2010 Methodology

Agricultural water withdrawal data for each county in Alabama was included in both the 2005 and 2010 Reports. The OWR compiled the data for these two reports in conjunction with the USGS using consensus methodologies and assumptions. Water-use sectors included aquaculture, golf courses, irrigation, and livestock. Irrigation uses include row crops, horticulture, sod production, nursery production, and orchards. Aquaculture water use includes commercial food production use, fish hatcheries and rearing, transportation, and cleaning. Livestock water uses were compiled for all terrestrial animal forms for commercial or recreational purposes including cattle, hogs, poultry, horses, sheep, turkey, and quail. Golf course water-use included water hazards, irrigation on greens, fairways, tee boxes, driving ranges, and common areas of a golf club. The water withdrawal data from OWR was then used to develop quantitative forecasts of agricultural water use.

The irrigation sector consists of surface-water and groundwater withdrawals at the subbasin level for the subsectors of: aquaculture, crops, golf courses, livestock, nurseries, and sod farms. All subsectors were estimated at the subbasin level in the 2010 Report, except for the aquaculture subsector. Subbasin estimates for aquaculture were taken from the “Estimates of Future Agricultural Water Withdrawal In Alabama” report produced by the Auburn University Water Resources Center (AUWRC) (Fowler and Rodekohr, 2015). In that report, the AUWRC assumed that all aquaculture was from surface water, even though there were some relatively low known use of groundwater withdrawals for 2010, at the county level. This information was not available at the subbasin level.

The 2010 Report average estimates of water withdrawals for the livestock and aquaculture subsectors was applied to each month to develop monthly withdrawal estimates. As for the other agricultural subsectors, the baseline data that was used to develop the 2010 annual withdrawal estimates was analyzed and a percent of average for each month was developed, resulting in a “bell curve” for each subsector. Those percentages were then multiplied to the annual average, to estimated monthly withdrawals for the remaining subsectors.

Agriculture – 2040 Methodology

The AUWRC report provided estimates of future irrigation acreage and water usage for counties and subbasin boundaries in 5-year increments from 2010 to 2040. The AUWRC developed these future estimates of agricultural water withdrawals based upon extrapolations from historic time-series data and long-range agricultural predictions about changes in Alabama agricultural water use. In addition to the quantitative analysis, faculty from Auburn University and Extension specialists in the disciplines of agricultural economics, agronomy, Biosystems engineering, aquaculture, animal sciences and poultry science were interviewed to provide their professional opinions about future changes and trends in water usage for various sectors of Alabama’s agriculture. These summaries did not include any monthly withdrawal information. Average withdrawal estimates for all subsectors, except for golf courses, was taken from this report and used in the development of the 2040 estimates. Monthly withdrawal estimates for all subsectors were developed by using the 2010 monthly estimated percent of average and applying

that to the 2040 annual averages for each subsector then the subsectors were added up to estimate a 2040 agriculture water withdrawals by subbasin. For the golf course subsector, OWR chose (after some additional analysis) to use the 2010 withdrawal estimate for the 2040 estimate rather than the projected reduction contained in the AUWRC report, thus assuming constant withdrawals from 2010 to 2040.

Industrial, Thermoelectric, and Mining Withdrawal Methodologies

Industrial, Thermoelectric, and Mining Withdrawals – 2010 Methodology

The 2010 industrial and thermoelectric withdrawal estimates by subbasin were primarily based on site-specific monthly reported data through the AWURP that was used to develop the 2010 Report. Subbasin estimates for mining withdrawals were aggregated from the county estimates published in the 2010 Report with the annual average withdrawal applied for each month.

Industrial, Thermoelectric, and Mining Withdrawals – 2040 Methodology

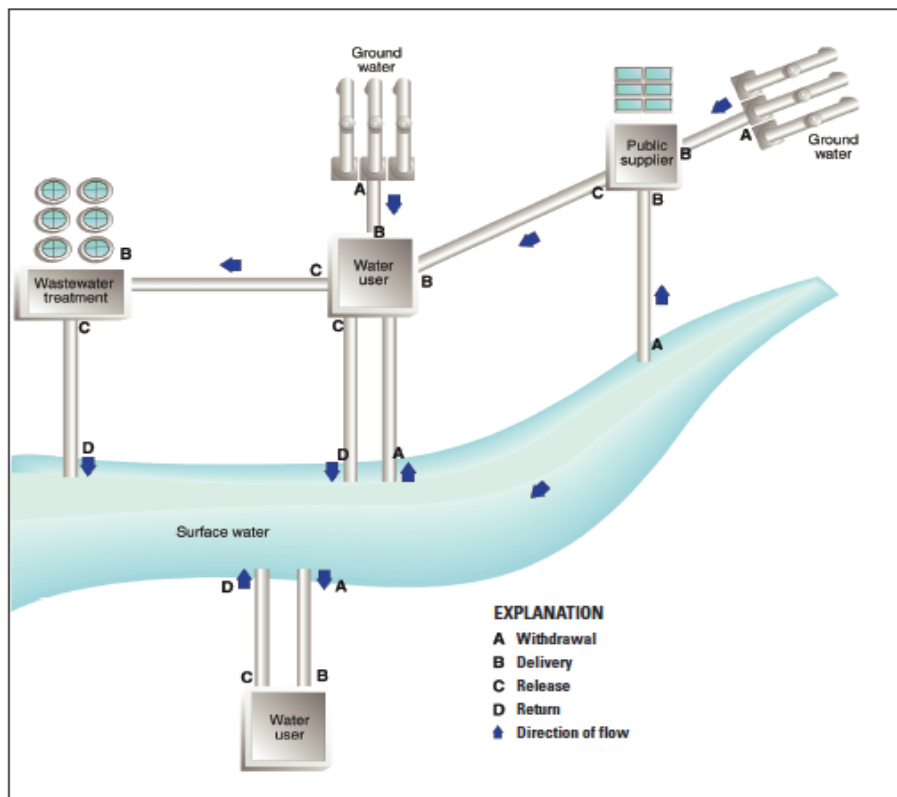
The Troy University Center for Water Resource Economics (CWRE) developed industrial water withdrawal projections for each county and subbasin through the year 2040. The CWRE's report, "Forecast of Water Withdrawals for Self-Supplied Industrial Users: 2010-2040" was based on reported thermoelectric and industrial water withdrawal data from 1993-2013 using a method of deflated gross domestic product (GDP) data from an international forecasting service.

To develop an estimated monthly distribution of industrial and thermoelectric withdrawals, the 2010 data was analyzed to develop a percentage of average withdrawal by month, and then multiplied by the average annual withdrawal from the CWRE report. For the mining subsector, withdrawals were assumed to be constant, therefore the average withdrawal was applied to each month.

Water Infrastructure

Water can be withdrawn from rivers, reservoirs, and aquifers to meet offstream needs for public supply, self-supplied residential, irrigation, livestock, aquaculture, self-supplied industrial, mining, and thermoelectric-power generation. A conceptual diagram of how water is withdrawn and returned is shown in figure 6.

Figure 6. Schematic showing the interrelation of water using sites (modified from Hutson and others, 2004).



Instream Water Uses

Water in river and reservoir systems is used instream for hydroelectric power generation, navigation, recreation, maintaining minimum streamflows to support fish and wildlife habitat, and for wastewater assimilation. Groundwater contributes to baseflow in streams and rivers. Instream use occurs without diverting or withdrawing water from surface-water sources. Although assessing instream water use in the Alabama subbasins was beyond the scope of this report, some hydroelectric power and navigation instream-use statistics were included because instream uses compete with offstream uses and can affect the quality and quantity of available water. Hydroelectric power is generated in Alabama by the PowerSouth Energy Cooperative (PSEC), Alabama Power Company (APC), Tennessee Valley Authority (TVA), and U.S. Army Corps of Engineers (USACE)–Mobile District at 21 mainstem and tributary locations (Appendix E). Georgia Power Company (GPC) and the USACE generate power from six facilities located on the Chattahoochee River bordering Alabama. Total generating capacity for the 27 plants is 3.58 gigawatts (Harper and Turner, 2014).

Navigation maintenance within Alabama is important for commercial shipping and recreational boating. USACE tries to maintain a 9-foot (ft.) channel on the navigable stretches of the Alabama-Coosa-Tallapoosa and the Apalachicola-Chattahoochee-Flint river systems. TVA maintains an 11-ft. channel on the mainstem of the Tennessee River, and the U.S. Coast Guard maintains a 12-ft. channel in the Intracoastal Waterway. Passage also is maintained on many miles

of secondary channels for recreational use. The instream use of hydroelectric power and navigation does not affect consumptive use because the water remains in the river systems.

Population

Alabama's population is expected to rise from 4,655,269 people in 2010 to 5,386,917 in 2040 for an increase of 731,648 people (16%) over the 2010 to 2040 period as reported by the CBER. The subbasins with the highest projected population increases are the Wheeler Lake (06030002; 196,964), the Cahaba (03150202; 102,872), and the Lower Tallapoosa (03150110; 53,073) subbasins (table 1 and figures 7a and 7b). Those subbasins account for 48 percent of the increasing population for the state from 2010 to 2040. The increases in population in these subbasins were associated with the urban areas of Huntsville and Decatur (Wheeler Lake subbasin (06030002), Birmingham (Cahaba subbasin (03150202), Montgomery, Prattville, and Millbrook (Lower Tallapoosa subbasin (03150110)). The subbasins with the greatest population declines from 2010 to 2040 include the Middle Tombigbee-Chickasaw (03160201; -6,286), the Middle Alabama (03150203; -4,758), and the Lower Tombigbee (03160203; -4,417) subbasins and are shown in figure 8.

The subbasins with the largest percentages of increase in population from 2010 to 2040 are the Perdido Bay (03140107; 70%), the Middle Chattahoochee-W.F. George Reservoir (03130003; 35%) the Wheeler Lake (06030002; 34%), the Lower Elk (06030004; 32%), the Chipola (03130002; 32%) and the Lower Coosa (03150107; 30%) subbasins. The subbasins with the largest percentages of decrease in population from 2010 to 2040 are the Middle Tombigbee-Chickasaw (03160201; -18%), the Upper Chickasaw (03170002; -17%) and the Middle Alabama (03150203; -17%) subbasins and are shown in figure 9.

Figure 7a. Map of estimated population change, 2010 to 2040.

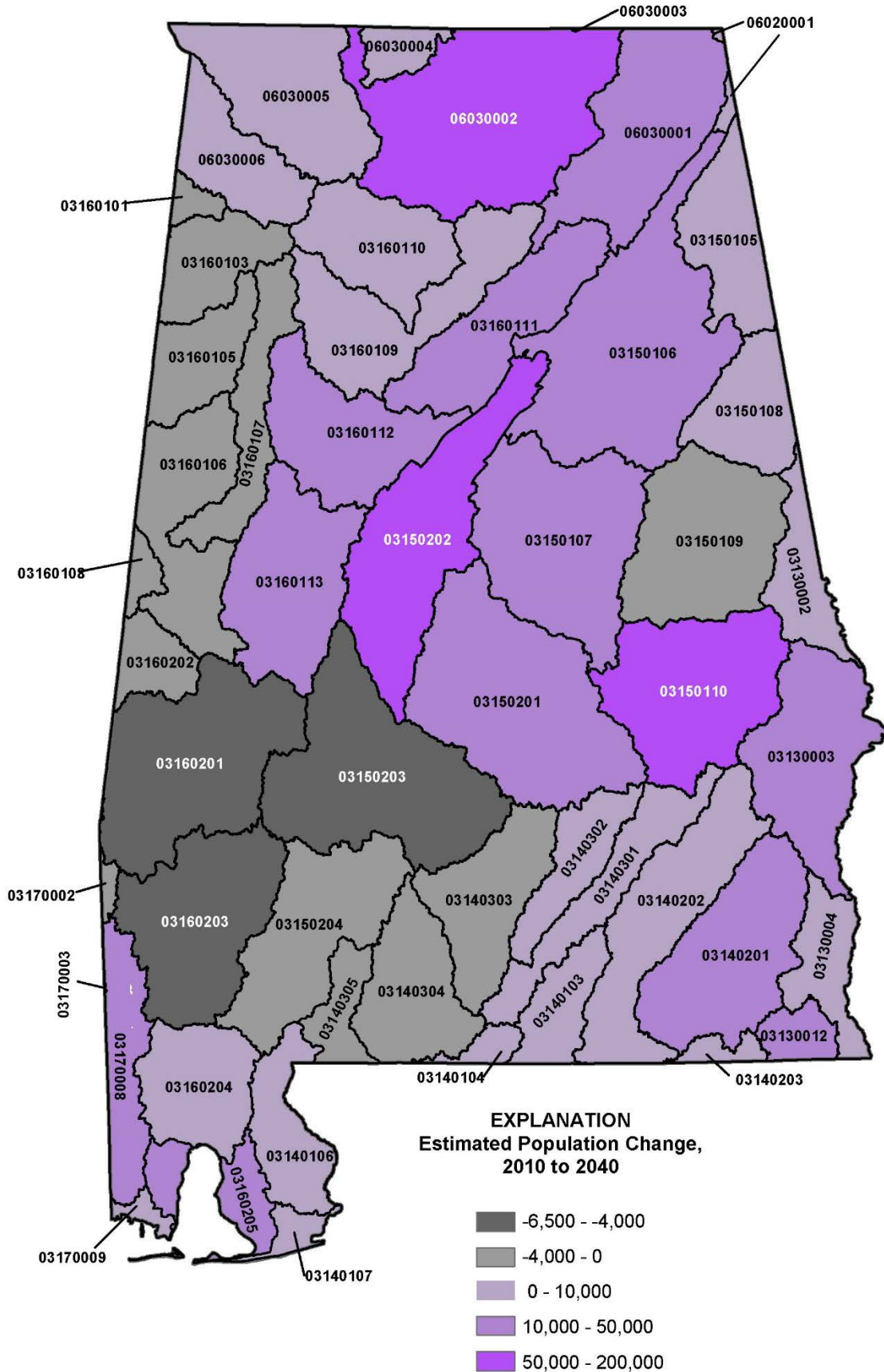


Figure 7b. Map of estimated percent change in population, 2010 to 2040, in percent.

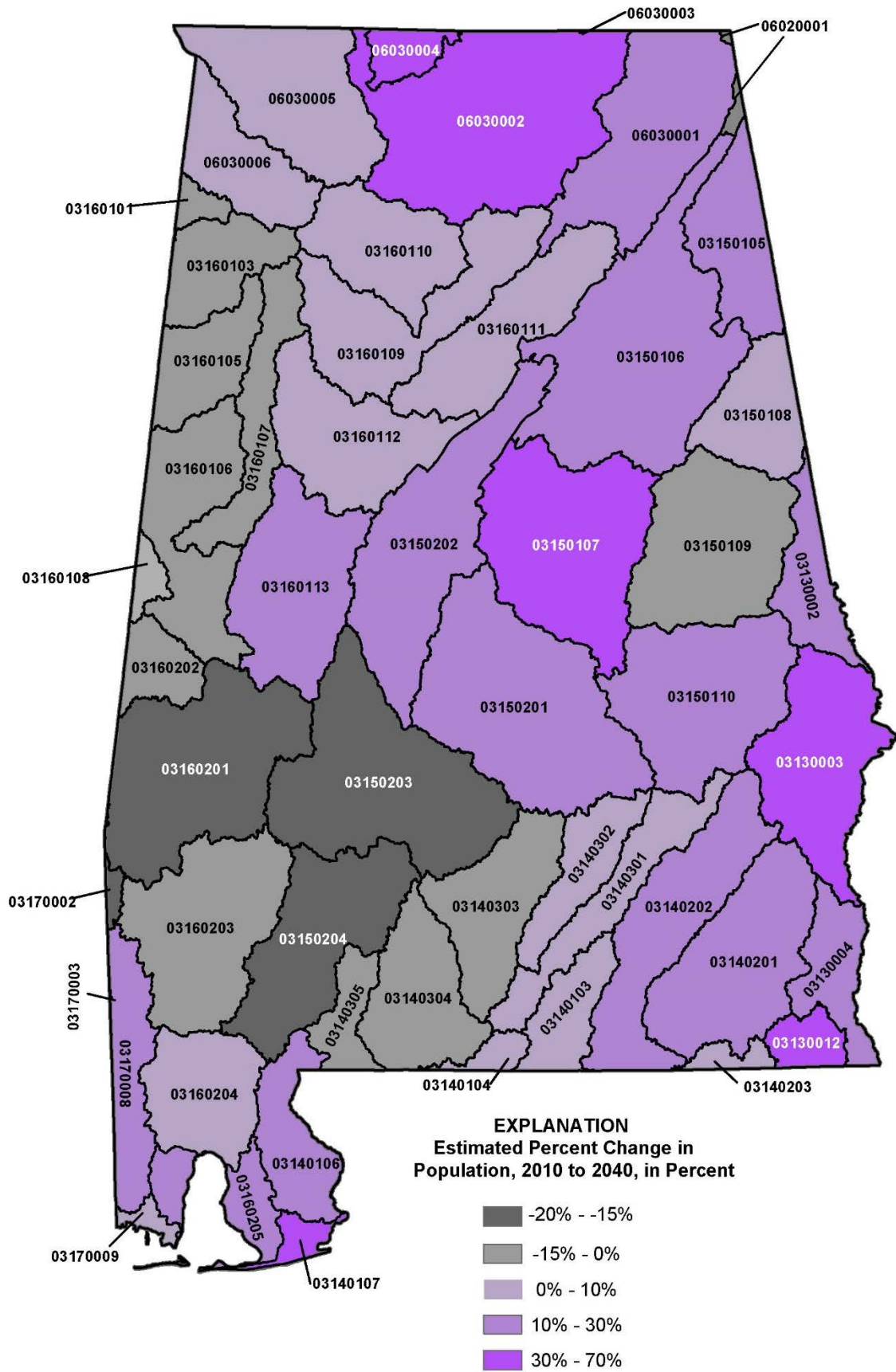


Table 1. Estimated population for 2010, 2040, change in population, and percent change in population.

Subbasin	Subbasin Name	2010 Estimated Population	2040 Estimated Population	Change in Population	% Change in Population
03130002	Middle Chattahoochee-Lake Harding	56,576	66,447	9,871	17%
03130003	Middle Chattahoochee-W.F. George Res.	108,424	146,420	37,996	35%
03130004	Lower Chattahoochee	34,447	41,517	7,070	21%
03130012	Chipola	32,769	43,138	10,369	32%
03140103	Yellow	21,009	21,588	579	3%
03140104	Blackwater	1,845	1,864	20	1%
03140106	Perdido	8,238	10,125	1,886	23%
03140107	Perdido Bay	28,168	47,790	19,622	70%
03140201	Upper Choctawhatchee	154,139	186,349	32,210	21%
03140202	Pea	51,243	58,117	6,873	13%
03140203	Lower Choctawhatchee	7,253	7,905	653	9%
03140301	Upper Conecuh	28,155	30,561	2,406	9%
03140302	Patsaliga	12,811	13,333	522	4%
03140303	Sepulga	26,417	24,523	-1,894	-7%
03140304	Lower Conecuh	25,219	23,295	-1,925	-8%
03140305	Escambia	18,345	17,207	-1,138	-6%
03150105	Upper Coosa	43,893	48,440	4,547	10%
03150106	Middle Coosa	355,738	401,354	45,616	13%
03150107	Lower Coosa	145,499	189,621	44,122	30%
03150108	Upper Tallapoosa	21,662	22,642	979	5%
03150109	Middle Tallapoosa	60,476	59,677	-799	-1%
03150110	Lower Tallapoosa	180,737	233,810	53,073	29%
03150201	Upper Alabama	325,625	365,550	39,925	12%
03150202	Cahaba	433,371	536,243	102,872	24%
03150203	Middle Alabama	28,540	23,782	-4,758	-17%
03150204	Lower Alabama	24,882	20,988	-3,894	-16%
03160101	Upper Tombigbee	2,710	2,572	-138	-5%
03160103	Buttahatchee	23,399	20,809	-2,590	-11%
03160105	Luxapallila	21,311	18,415	-2,897	-14%
03160106	Middle Tombigbee-Lubbub	23,667	22,527	-1,141	-5%
03160107	Sipsey	23,143	22,890	-253	-1%
03160108	Noxubee	1,326	1,163	-164	-12%
03160109	Mulberry Fork	125,906	133,598	7,691	6%
03160110	Sipsey Fork	52,585	52,665	80	0%
03160111	Locust Fork	309,901	321,240	11,339	4%
03160112	Upper Black Warrior	269,312	293,958	24,646	9%
03160113	Lower Black Warrior	117,521	136,929	19,409	17%
03160201	Middle Tombigbee-Chickasaw	34,454	28,168	-6,286	-18%
03160202	Sucarnoochee	6,518	5,656	-862	-13%
03160203	Lower Tombigbee	32,272	27,855	-4,417	-14%
03160204	Mobile-Tensaw	146,380	147,986	1,606	1%
03160205	Mobile Bay	212,016	245,682	33,666	16%
03170002	Upper Chickasawhay	1,058	873	-184	-17%
03170003	Lower Chickasawhay	6	5	-1	-15%
03170008	Escatawpa	73,129	86,608	13,479	18%
03170009	Mississippi Coastal	14,007	14,819	812	6%
06020001	Middle Tennessee-Chickamauga	1,133	1,150	17	1%
06030001	Guntersville Lake	147,417	172,909	25,492	17%
06030002	Wheeler Lake	574,955	771,919	196,964	34%
06030003	Elk	4	4	0	-7%
06030004	Lower Elk	16,783	22,119	5,336	32%
06030005	Pickwick Lake	157,223	159,781	2,559	2%
06030006	Bear	31,649	32,331	682	2%

Figure 8. Change in subbasin population 2010 to 2040, by rank.

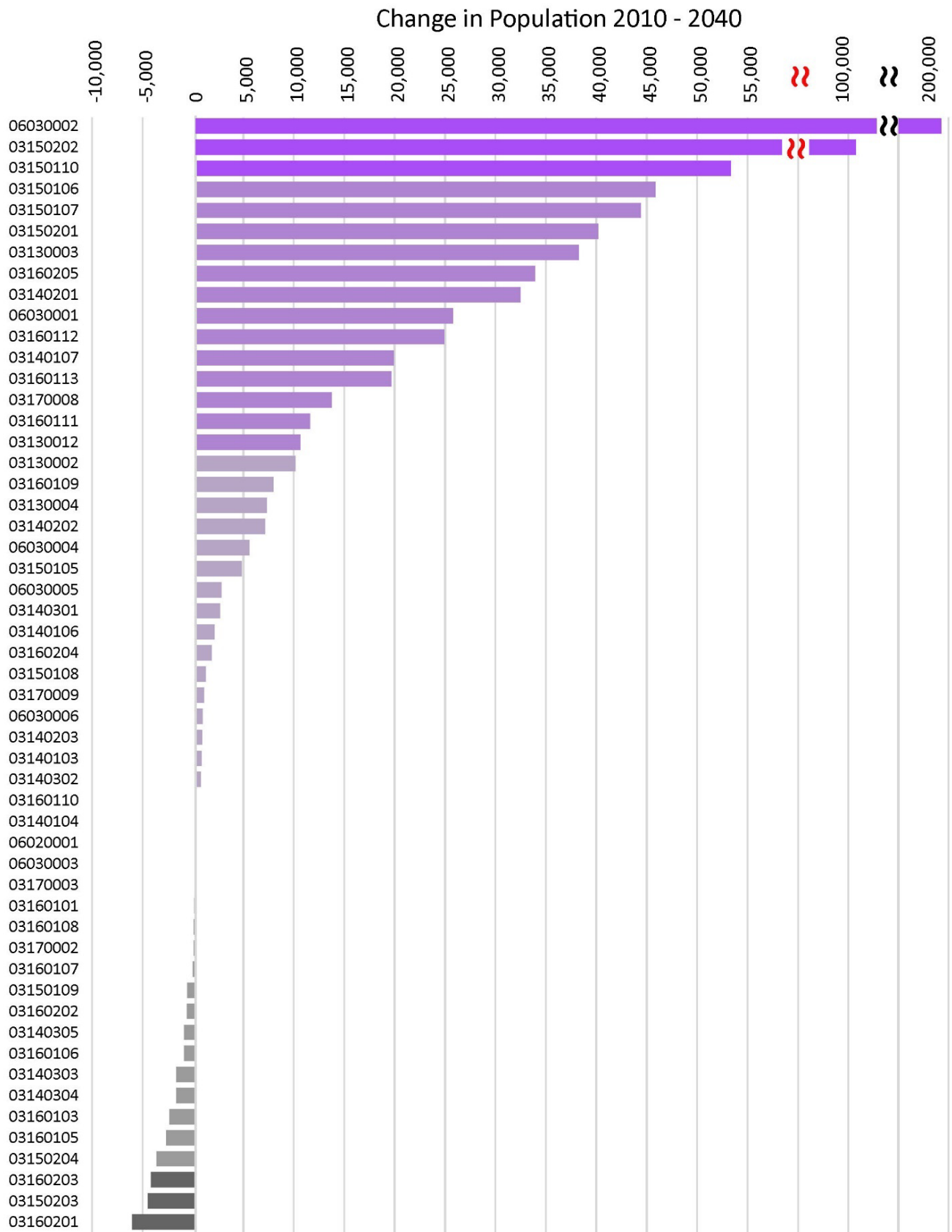
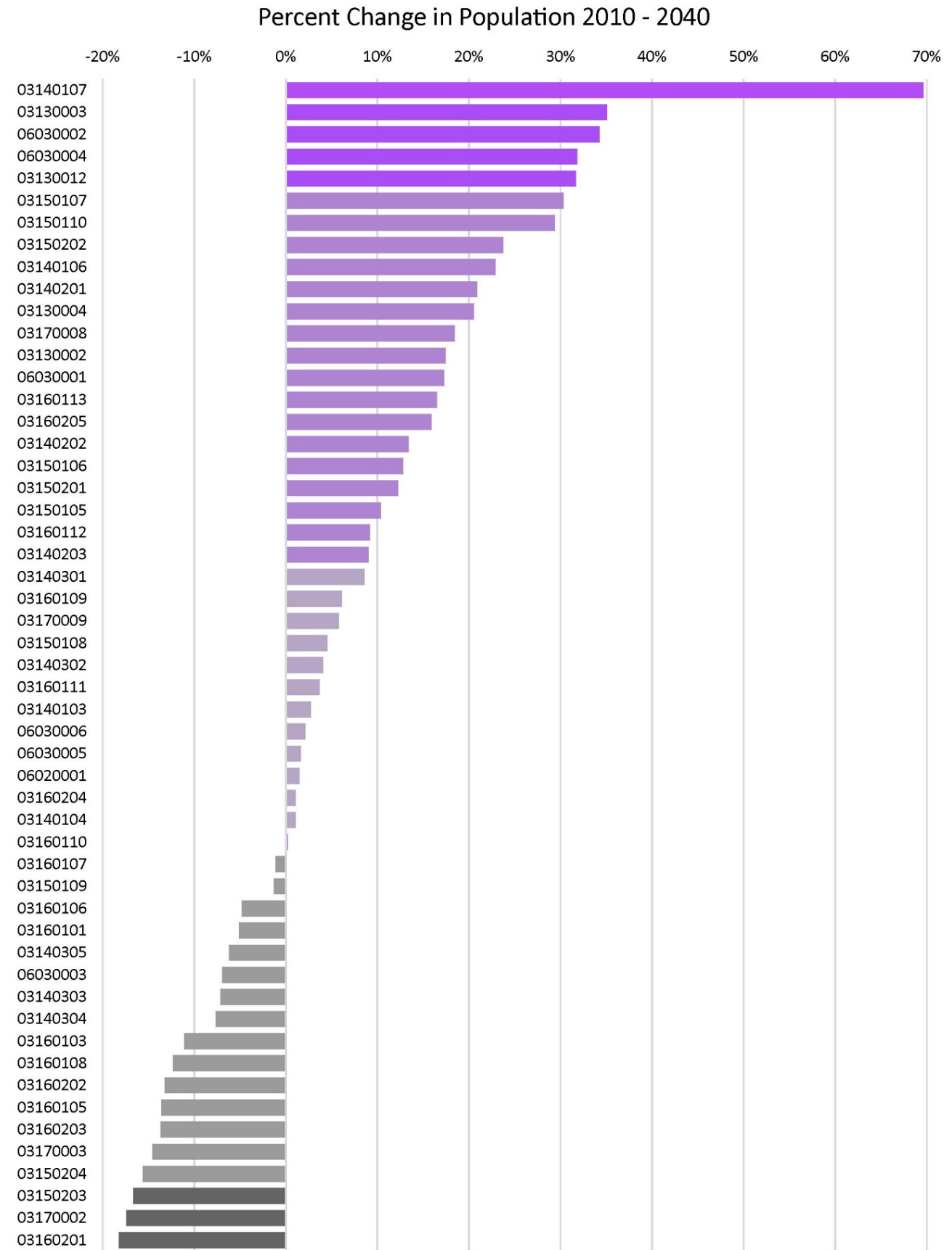


Figure 9. Percent change in population, 2010 to 2040, by rank.



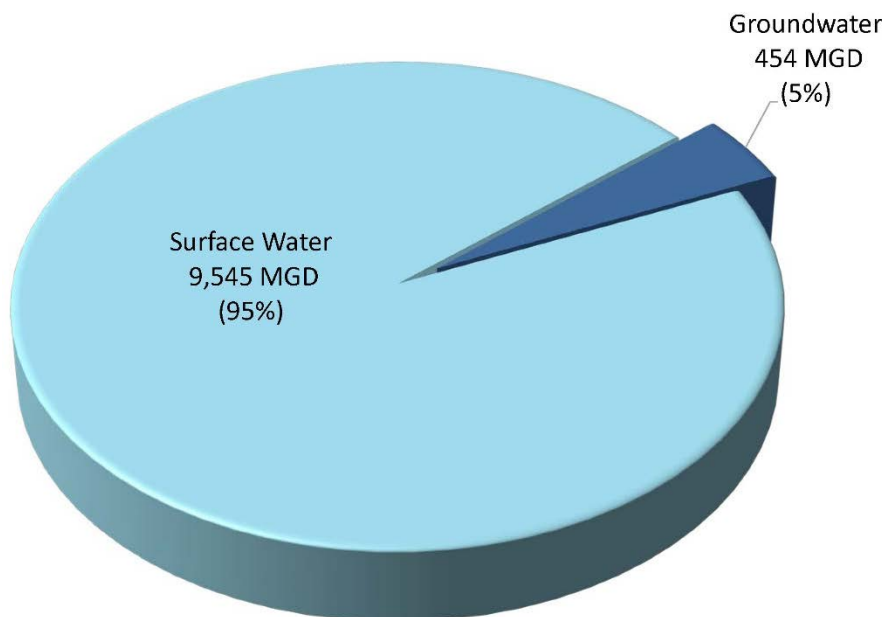
Total Alabama Water Withdrawals

All the withdrawal, return and net demand data for 2010 and 2040 for each subbasin is found in Appendix F. This appendix contains sector-specific information on withdrawals and returns as well as net demand summaries by subbasin. Graphical depictions of withdrawals, returns, and net demand are also included in the appendix.

Total Alabama Withdrawals – 2010 (All Sectors)

Total withdrawals in Alabama for 2010 were determined from estimates of water withdrawals from three major sectors– public supply and residential, agriculture (aquaculture, golf courses, irrigation, and livestock), and industrial, thermoelectric, and mining. Total water withdrawals for 2010 were estimated to be 9,999 MGD. Estimates of withdrawal by source indicate that total surface-water withdrawals were approximately 95 percent of the total (9,545 MGD), and the remaining 5 percent from groundwater (454 MGD) (figure 10). These values differ slightly from the 2010 Report due to rounding methods, sector consolidation, and some fundamental differences in methodology related to certain sectors; for example, all aquaculture water withdrawals for this report are reported as surface water, whereas in the 2010 Report there was surface water and groundwater reported.

Figure 10. Withdrawals by source, 2010, in MGD.



Total withdrawals for 2010 are listed in tables 2, 3, and 4. For 2010, the industrial, thermoelectric, and mining sector accounted for 88 percent of the total water withdrawals (8,840 MGD), the public supply and residential sector accounted for 9 percent of total withdrawals (870 MGD) and agriculture made up the remaining 3 percent (287 MGD) (figure 11). The subbasins with the highest total water withdrawals for 2010 were the Wheeler Lake (06030002; 3,002 MGD),

Pickwick Lake (06030005; 1,363 MGD), the Guntersville Lake (06030001; 1,100 MGD), and the Mobile-Tensaw (03160204; 1,023 MGD) subbasins (figure 12).

Surface-water withdrawals in the industrial, thermoelectric, and mining sector accounted for 92 percent of total surface-water withdrawals. Fifty-seven percent (57%) of the total surface-water withdrawals occurred in the Wheeler Lake (06030002; 2,871 MGD), Pickwick Lake (06030005; 1,332 MGD), and Guntersville Lake (06030001; 1,053 MGD) subbasins, with the Wheeler Lake subbasin accounting for 30 percent of all surface-water withdrawals – primarily for thermoelectric water withdrawals.

Groundwater withdrawals in the public supply and residential sector accounted for 70 percent of the total groundwater withdrawals. Twenty-eight percent (28%) of the total groundwater withdrawals occurred in the Middle Coosa (03150106; 47 MGD), the Upper Alabama (03150201; 41 MGD), and the Wheeler Lake (06030002; 41 MGD) subbasins, with the Middle Coosa subbasin accounting for 10 percent of all groundwater withdrawals – primarily for public supply and residential water withdrawals.

Figure 11. Total withdrawals by sector, 2010, in MGD.

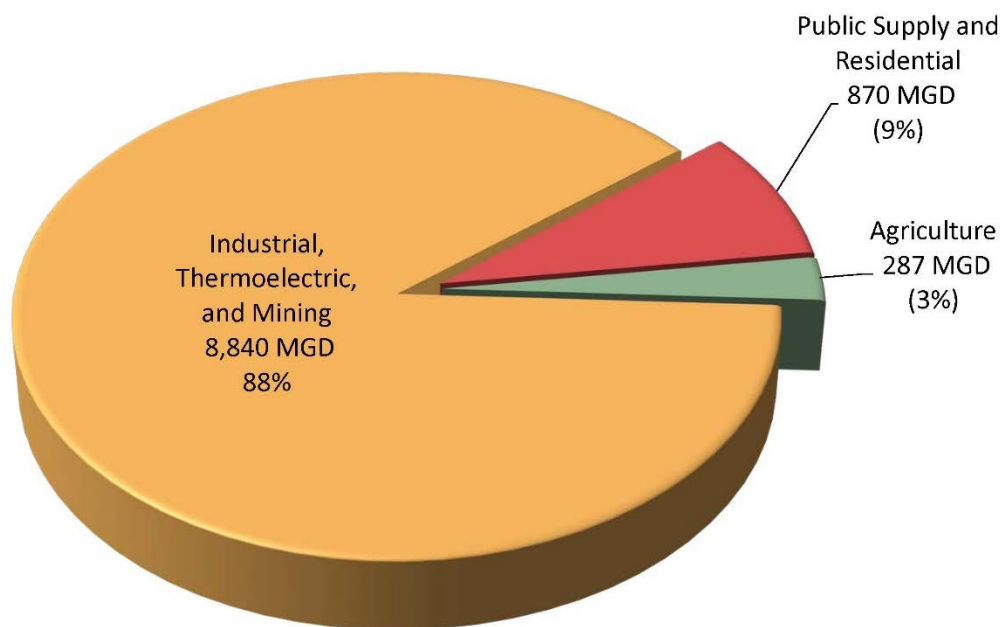


Figure 12. Map of total withdrawals, 2010, in MGD.

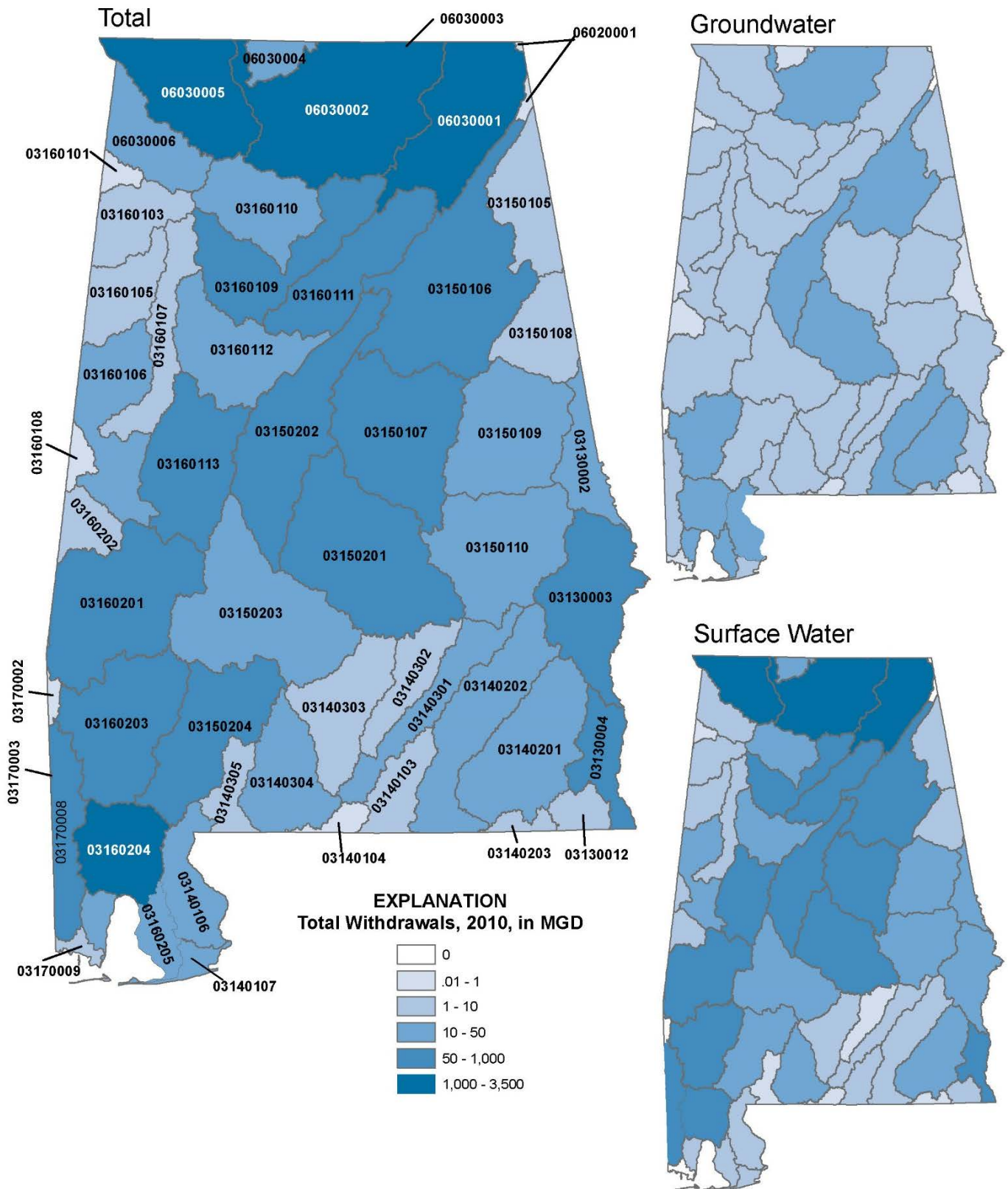


Table 2. Total groundwater withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	0.83	0.84	0.87	0.95	1.03	1.17	1.22	1.12	1.03	0.96	0.86	0.83	0.98
03130003	Middle Chattahoochee-W.F. George Res.	7.61	7.13	7.21	8.33	8.82	9.44	9.69	9.09	9.21	8.30	6.98	6.87	8.22
03130004	Lower Chattahoochee	10.14	10.80	10.73	13.80	17.29	21.62	22.31	19.75	16.11	13.47	12.48	11.54	15.00
03130012	Chipola	4.10	3.41	3.65	5.43	8.13	12.73	14.05	10.62	7.07	5.36	3.28	3.07	6.74
03140103	Yellow	2.28	1.89	1.94	2.48	2.79	3.11	3.33	2.87	2.72	2.60	1.92	1.99	2.49
03140104	Blackwater	0.32	0.26	0.27	0.36	0.43	0.53	0.59	0.50	0.45	0.37	0.28	0.25	0.38
03140106	Perdido	7.46	7.70	10.77	19.15	20.20	24.03	26.66	23.04	23.81	19.85	10.70	8.39	16.81
03140107	Perdido Bay	6.81	6.50	7.31	10.55	11.10	11.96	13.44	11.42	12.15	10.43	6.97	4.95	9.47
03140201	Upper Choctawhatchee	20.75	20.77	24.97	25.36	30.37	34.33	34.72	33.25	32.70	26.77	22.30	21.69	27.33
03140202	Pea	9.10	9.10	9.33	10.82	11.88	13.12	13.82	13.24	12.54	10.97	9.48	9.03	11.03
03140203	Lower Choctawhatchee	0.87	0.81	0.89	1.13	1.37	1.75	1.81	1.55	1.40	1.12	0.92	0.86	1.21
03140301	Upper Conecuh	9.17	7.52	7.59	8.47	9.05	9.96	10.15	9.65	9.81	9.71	7.42	7.33	8.82
03140302	Patsaliga	2.10	1.96	1.88	2.30	2.47	2.70	2.75	2.39	2.44	2.11	1.86	1.79	2.23
03140303	Sepulga	4.19	3.80	3.80	3.90	4.06	4.37	4.57	4.18	3.93	3.83	3.80	3.81	4.02
03140304	Lower Conecuh	6.59	5.49	5.60	6.29	6.75	7.81	8.94	7.29	6.95	6.87	5.62	5.74	6.66
03140305	Escambia	2.84	2.51	2.55	2.74	3.83	3.52	3.61	3.12	2.93	2.78	2.47	2.27	2.93
03150105	Upper Coosa	3.90	3.57	3.48	3.75	4.01	4.27	4.43	4.13	4.00	3.66	3.47	3.55	3.85
03150106	Middle Coosa	48.59	45.29	44.08	45.57	46.46	49.10	51.06	51.04	50.06	46.56	43.68	44.84	47.19
03150107	Lower Coosa	10.09	7.91	8.05	8.47	9.67	11.24	11.74	12.11	11.09	10.25	9.49	7.87	9.83
03150108	Upper Tallapoosa	2.09	2.13	2.17	2.34	2.70	3.26	3.41	3.00	2.51	2.30	2.12	2.09	2.51
03150109	Middle Tallapoosa	1.64	1.66	1.72	1.88	1.98	2.16	2.24	2.09	2.00	1.90	1.72	1.66	1.89
03150110	Lower Tallapoosa	5.48	4.74	6.21	7.76	8.23	9.70	11.46	10.15	9.99	8.48	6.09	5.28	7.80
03150201	Upper Alabama	36.21	30.53	30.03	38.94	45.18	49.35	49.12	48.25	47.37	44.45	36.30	34.98	40.89
03150202	Cahaba	29.08	26.46	27.50	29.02	30.56	32.35	34.01	33.80	33.08	31.37	27.64	27.17	30.17
03150203	Middle Alabama	5.71	5.37	3.93	4.48	4.36	4.80	4.86	4.93	6.36	4.58	4.14	4.12	4.80
03150204	Lower Alabama	3.69	3.47	4.17	6.48	6.81	8.13	8.70	7.73	7.84	6.79	4.24	3.46	5.96
03160101	Upper Tombigbee	0.20	0.20	0.20	0.21	0.22	0.23	0.24	0.23	0.21	0.20	0.20	0.20	0.21
03160103	Buttahatchee	1.42	1.24	1.27	1.31	1.43	1.69	1.67	1.55	1.39	1.32	1.30	1.33	1.41
03160105	Luxapallila	2.22	2.05	1.96	1.96	2.05	2.47	2.57	2.63	2.29	2.00	1.92	2.03	2.18
03160106	Middle Tombigbee-Lubbub	5.94	4.94	5.45	5.56	5.78	6.08	6.51	6.05	6.00	6.00	5.40	5.56	5.77
03160107	Sipsey	1.47	1.43	1.42	1.50	1.63	1.78	1.85	1.74	1.61	1.57	1.42	1.41	1.57
03160108	Noxubee	0.15	0.15	0.16	0.17	0.19	0.22	0.23	0.21	0.18	0.16	0.15	0.15	0.18
03160109	Mulberry Fork	2.68	2.65	2.80	3.00	3.26	3.76	6.51	3.64	5.82	2.91	2.45	2.71	3.52
03160110	Sipsey Fork	1.51	1.53	1.59	1.75	1.84	2.01	2.09	1.95	1.88	1.78	1.59	1.53	1.75
03160111	Locust Fork	5.02	5.09	5.00	5.04	5.28	5.62	5.72	5.44	6.02	5.56	5.37	5.45	5.38
03160112	Upper Black Warrior	2.02	2.07	2.21	2.53	2.74	2.93	3.10	3.00	3.00	2.56	2.05	1.86	2.51
03160113	Lower Black Warrior	6.57	5.32	5.52	5.63	5.94	6.47	6.57	6.87	7.12	6.35	5.71	6.00	6.17
03160201	Middle Tombigbee-Chickasaw	6.24	5.76	5.97	5.69	5.96	6.22	6.24	6.10	5.20	5.07	4.71	5.28	5.70
03160202	Sucarnoochee	0.48	0.50	0.53	0.52	0.58	0.69	0.72	0.65	0.56	0.50	0.48	0.48	0.56
03160203	Lower Tombigbee	12.22	12.28	12.84	12.79	11.83	11.32	13.40	14.32	12.95	13.09	11.31	12.01	12.53
03160204	Mobile-Tensaw	18.64	18.52	21.07	29.54	31.74	35.05	38.53	33.50	34.63	31.83	20.86	18.15	27.67
03160205	Mobile Bay	17.58	16.52	19.64	30.40	31.92	35.93	39.54	35.70	37.26	32.80	20.86	16.57	27.89
03170002	Upper Chickasawhay	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.05
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	7.22	6.11	6.88	9.06	9.38	10.71	11.12	10.43	10.20	9.31	6.90	6.41	8.64
03170009	Mississippi Coastal	1.88	1.80	2.13	3.21	3.44	4.01	4.41	3.96	3.90	3.41	2.41	1.81	3.03
06020001	Middle Tennessee-Chickamauga	0.44	0.44	0.45	0.47	0.49	0.53	0.56	0.53	0.53	0.18	0.16	0.16	0.41
06030001	Guntersville Lake	8.02	8.88	10.49	8.23	9.28	8.22	8.51	10.89	8.65	10.08	7.21	8.94	8.95
06030002	Wheeler Lake	32.85	33.31	34.48	39.77	43.70	49.12	55.29	50.39	43.17	39.46	33.66	33.89	40.76
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.48	0.50	0.60	0.89	1.05	1.35	1.48	1.24	1.11	0.93	0.61	0.50	0.90
06030005	Pickwick Lake	3.37	3.39	3.68	5.44	5.21	6.15	6.60	5.77	5.29	4.64	3.69	3.41	4.72
06030006	Bear	2.27	2.19	2.20	2.28	2.49	2.84	2.93	3.09	2.41	2.26	2.14	2.17	2.44

Table 3. Total surface-water withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	12.39	10.80	10.62	12.43	13.15	13.72	14.86	15.46	16.31	12.32	11.30	11.31	12.89
03130003	Middle Chattahoochee-W.F. George Res	36.75	37.61	39.08	43.41	44.55	52.42	54.78	49.63	48.69	45.75	39.27	36.27	44.02
03130004	Lower Chattahoochee	70.11	72.49	64.77	64.35	80.34	114.73	126.05	131.32	122.92	95.00	81.92	82.22	92.19
03130012	Chipola	0.19	0.28	0.40	1.00	1.87	3.16	3.58	2.71	1.78	1.08	0.36	0.19	1.38
03140103	Yellow	0.41	0.44	0.59	1.04	1.24	1.61	1.80	1.52	1.45	1.15	0.62	0.45	1.03
03140104	Blackwater	0.05	0.06	0.08	0.15	0.18	0.24	0.27	0.22	0.19	0.15	0.08	0.06	0.14
03140106	Perdido	0.48	0.57	1.01	2.34	2.83	3.77	4.31	3.55	3.48	2.66	1.12	0.60	2.23
03140107	Perdido Bay	0.18	0.24	0.74	1.67	1.89	2.38	2.91	2.64	2.49	1.77	0.86	0.21	1.50
03140201	Upper Choctawhatchee	4.68	5.11	6.17	9.26	12.38	17.38	19.42	16.01	12.46	9.42	6.13	4.77	10.27
03140202	Pea	1.13	1.37	1.78	3.33	5.17	8.14	9.12	6.94	4.81	3.37	1.66	1.21	4.00
03140203	Lower Choctawhatchee	0.16	0.18	0.24	0.43	0.60	0.90	1.00	0.77	0.58	0.43	0.23	0.17	0.47
03140301	Upper Conecuh	2.06	2.09	1.86	2.91	4.00	5.68	6.07	5.49	3.93	3.51	2.33	2.49	3.53
03140302	Patsaliga	0.41	0.44	0.48	0.63	0.85	1.21	1.31	1.05	0.76	0.61	0.46	0.42	0.72
03140303	Sepulga	0.90	0.97	1.53	2.49	2.71	3.21	3.80	3.59	3.35	2.54	1.67	0.91	2.31
03140304	Lower Conecuh	32.69	27.41	34.98	35.15	35.87	36.98	37.03	36.73	34.03	33.86	33.90	33.30	34.33
03140305	Escambia	0.05	0.06	0.09	0.22	0.33	0.47	0.54	0.45	0.41	0.28	0.11	0.06	0.26
03150105	Upper Coosa	3.02	3.01	3.56	5.70	6.56	8.40	9.32	7.83	7.25	5.75	3.49	2.83	5.56
03150106	Middle Coosa	148.83	180.64	168.98	185.53	192.39	242.29	271.22	278.93	198.24	196.83	181.93	186.94	202.73
03150107	Lower Coosa	713.23	554.08	576.14	520.48	647.77	898.75	894.44	573.99	675.04	531.85	697.61	864.60	679.00
03150108	Upper Tallapoosa	1.47	1.35	1.35	1.51	1.83	2.22	2.29	2.12	1.79	1.60	1.43	1.41	1.70
03150109	Middle Tallapoosa	18.30	16.55	15.08	17.40	17.83	21.27	23.67	22.83	22.94	18.89	15.63	18.79	19.10
03150110	Lower Tallapoosa	32.71	32.74	33.85	38.65	40.01	43.37	46.93	47.13	46.18	38.60	31.28	27.46	38.24
03150201	Upper Alabama	67.49	67.66	68.13	73.82	74.63	89.39	92.80	92.31	83.98	76.68	69.38	67.18	76.95
03150202	Cahaba	58.23	52.75	52.78	62.67	64.01	63.76	69.79	68.90	68.95	60.94	55.16	52.72	60.89
03150203	Middle Alabama	32.60	33.57	33.83	34.37	35.72	37.72	38.40	37.80	35.73	31.83	31.69	32.16	34.62
03150204	Lower Alabama	44.76	46.89	33.82	47.93	44.79	49.77	52.57	55.55	54.53	48.36	44.30	42.54	47.15
03160101	Upper Tombigbee	0.09	0.09	0.09	0.12	0.12	0.14	0.15	0.13	0.13	0.12	0.10	0.09	0.11
03160103	Buttahatchee	2.48	2.20	2.10	2.09	2.19	2.49	2.59	2.51	2.46	2.35	2.13	2.31	2.32
03160105	Luxapallila	2.36	2.23	2.20	2.43	2.53	2.86	2.91	2.90	2.80	2.53	2.18	2.22	2.51
03160106	Middle Tombigbee-Lubbub	10.39	10.43	10.54	10.92	11.18	11.62	11.81	11.49	11.29	10.99	10.55	10.42	10.97
03160107	Sipsey	1.08	1.11	1.24	1.65	1.84	2.18	2.36	2.10	2.03	1.75	1.27	1.11	1.64
03160108	Noxubee	1.08	1.08	1.09	1.09	1.09	1.10	1.10	1.10	1.10	1.09	1.09	1.08	1.09
03160109	Mulberry Fork	970.80	1,070.98	1,082.91	1,040.17	847.65	1,132.86	1,118.55	1,118.61	1,064.35	661.40	633.94	965.35	975.63
03160110	Sipsey Fork	7.72	7.85	12.59	8.18	8.70	14.28	22.15	29.93	37.09	36.61	25.76	39.63	20.87
03160111	Locust Fork	58.40	60.89	63.10	65.88	66.46	70.09	73.29	70.98	70.71	67.03	62.92	62.72	66.04
03160112	Upper Black Warrior	31.90	28.49	29.41	36.38	37.36	40.14	45.00	45.82	45.61	40.24	33.03	29.69	36.92
03160113	Lower Black Warrior	437.48	431.50	390.20	289.48	441.02	435.58	437.15	437.65	311.19	323.70	232.25	402.99	380.85
03160201	Middle Tombigbee-Chickasaw	64.43	64.59	55.58	63.10	67.16	66.51	61.97	58.32	61.54	64.63	65.20	64.57	63.13
03160202	Sucarnoochee	1.90	1.91	1.92	2.02	2.08	2.23	2.27	2.25	2.26	2.15	1.94	1.90	2.07
03160203	Lower Tombigbee	106.80	105.09	105.37	107.14	107.03	106.99	106.62	106.04	101.58	98.31	86.17	106.06	103.60
03160204	Mobile-Tensaw	993.99	1,154.33	1,048.07	908.81	878.14	1,132.37	1,137.24	1,173.21	905.82	654.82	976.28	967.75	994.24
03160205	Mobile Bay	0.65	0.88	2.36	5.58	6.63	8.56	10.31	9.24	8.78	6.16	2.79	0.76	5.22
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	73.37	67.10	66.66	70.74	70.39	75.85	73.44	74.10	74.31	70.40	67.57	66.93	70.91
03170009	Mississippi Coastal	0.06	0.08	0.12	0.33	0.51	0.73	0.84	0.71	0.65	0.43	0.15	0.06	0.39
06020001	Middle Tennessee-Chickamauga	0.09	0.09	0.11	0.16	0.18	0.22	0.25	0.21	0.20	0.17	0.11	0.09	0.16
06030001	Guntersville Lake	1,364.52	1,233.75	1,084.85	1,072.56	947.37	1,306.56	1,068.13	1,314.92	1,116.88	1,038.73	718.30	823.55	1,090.84
06030002	Wheeler Lake	3,110.49	2,973.71	2,066.88	3,134.75	3,171.38	3,189.81	3,108.47	2,833.52	3,180.15	2,941.42	2,716.68	3,112.02	2,961.61
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	8.49	8.27	8.44	9.21	10.37	12.27	13.94	13.05	10.81	9.36	8.34	7.55	10.01
06030005	Pickwick Lake	1,412.75	1,403.06	1,398.77	1,403.40	1,379.74	1,428.60	1,434.33	1,421.69	1,424.78	1,411.39	870.99	1,305.20	1,357.89
06030006	Bear	8.92	8.13	7.70	8.22	8.77	9.66	10.11	10.18	9.89	8.77	8.47	8.52	8.94

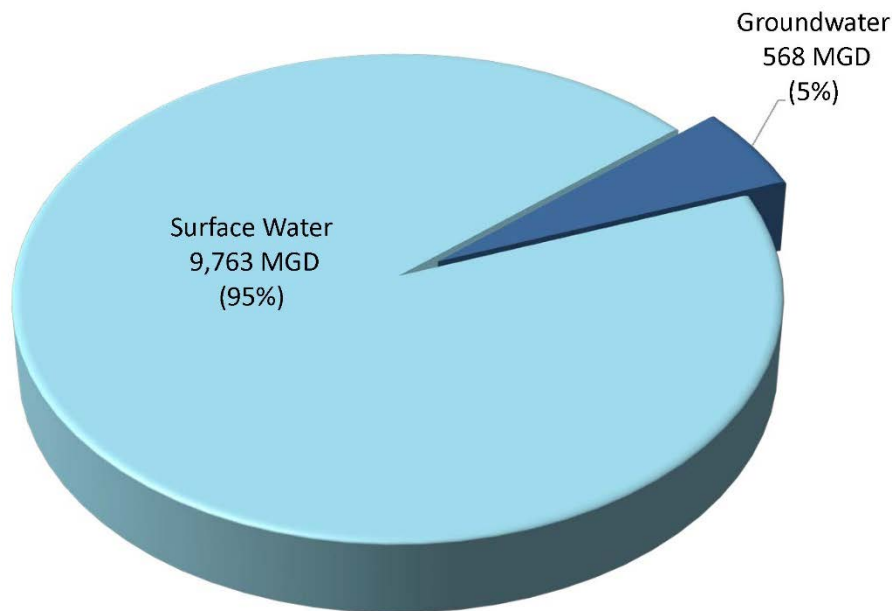
Table 4. Total withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	13.22	11.63	11.48	13.39	14.18	14.89	16.08	16.57	17.34	13.28	12.16	12.14	13.86
03130003	Middle Chattahoochee-W.F. George Res.	44.35	44.73	46.29	51.74	53.37	61.86	64.47	58.72	57.90	54.05	46.25	43.14	52.24
03130004	Lower Chattahoochee	80.25	83.30	75.50	78.16	97.63	136.35	148.37	151.07	139.02	108.47	94.40	93.76	107.19
03130012	Chipola	4.28	3.70	4.05	6.43	10.00	15.90	17.63	13.33	8.85	6.45	3.64	3.27	8.13
03140103	Yellow	2.69	2.33	2.52	3.52	4.03	4.72	5.13	4.38	4.17	3.75	2.54	2.44	3.52
03140104	Blackwater	0.37	0.32	0.35	0.50	0.61	0.78	0.87	0.72	0.64	0.53	0.36	0.30	0.53
03140106	Perdido	7.93	8.28	11.78	21.49	23.03	27.79	30.97	26.59	27.29	22.51	11.82	8.99	19.04
03140107	Perdido Bay	6.99	6.74	8.04	12.22	12.99	14.33	16.35	14.06	14.64	12.19	7.83	5.16	10.96
03140201	Upper Choctawhatchee	25.43	25.88	31.14	34.62	42.75	51.71	54.13	49.26	45.16	36.20	28.43	26.45	37.60
03140202	Pea	10.22	10.46	11.11	14.15	17.05	21.26	22.94	20.18	17.35	14.34	11.14	10.24	15.04
03140203	Lower Choctawhatchee	1.03	1.00	1.13	1.55	1.97	2.64	2.81	2.32	1.97	1.55	1.15	1.04	1.68
03140301	Upper Conecuh	11.23	9.61	9.45	11.37	13.05	15.64	16.22	15.14	13.73	13.22	9.75	9.81	12.35
03140302	Patsaliga	2.51	2.40	2.36	2.93	3.32	3.91	4.06	3.44	3.20	2.72	2.32	2.21	2.95
03140303	Sepulga	5.09	4.77	5.33	6.38	6.77	7.58	8.38	7.76	7.28	6.37	5.46	4.73	6.33
03140304	Lower Conecuh	39.28	32.91	40.57	41.44	42.63	44.79	45.96	44.03	40.98	40.73	39.52	39.04	40.99
03140305	Escambia	2.89	2.57	2.64	2.96	4.16	3.99	4.14	3.56	3.34	3.06	2.58	2.32	3.18
03150105	Upper Coosa	6.92	6.58	7.04	9.44	10.57	12.66	13.75	11.97	11.25	9.41	6.96	6.38	9.41
03150106	Middle Coosa	197.42	225.93	213.07	231.10	238.86	291.39	322.28	329.97	248.30	243.39	225.61	231.78	249.92
03150107	Lower Coosa	723.32	561.98	584.19	528.96	657.44	909.99	906.18	586.10	686.13	542.10	707.10	872.47	688.83
03150108	Upper Tallapoosa	3.55	3.48	3.52	3.85	4.53	5.48	5.70	5.12	4.30	3.90	3.56	3.49	4.21
03150109	Middle Tallapoosa	19.95	18.21	16.79	19.28	19.81	23.43	25.91	24.92	24.94	20.78	17.34	20.45	20.98
03150110	Lower Tallapoosa	38.19	37.48	40.06	46.41	48.24	53.08	58.39	57.28	56.16	47.08	37.37	32.74	46.04
03150201	Upper Alabama	103.70	98.19	98.16	112.75	119.81	138.73	141.92	140.56	131.35	121.13	105.68	102.16	117.85
03150202	Cahaba	87.31	79.21	80.28	91.69	94.57	96.11	103.80	102.70	102.03	92.30	82.80	79.89	91.06
03150203	Middle Alabama	38.31	38.94	37.76	38.85	40.08	42.52	43.26	42.73	42.08	36.41	35.83	36.28	39.42
03150204	Lower Alabama	48.46	50.36	37.98	54.41	51.60	57.90	61.26	63.27	62.36	55.16	48.54	46.00	53.11
03160101	Upper Tombigbee	0.28	0.29	0.29	0.32	0.34	0.37	0.39	0.36	0.34	0.32	0.29	0.29	0.32
03160103	Buttahatchee	3.89	3.44	3.37	3.40	3.62	4.18	4.26	4.06	3.85	3.67	3.43	3.64	3.73
03160105	Luxapallila	4.58	4.28	4.16	4.39	4.57	5.32	5.48	5.53	5.09	4.53	4.10	4.25	4.69
03160106	Middle Tombigbee-Lubbub	16.33	15.37	15.99	16.47	16.97	17.70	18.32	17.53	17.29	16.99	15.96	15.98	16.74
03160107	Sipsey	2.55	2.53	2.66	3.15	3.48	3.96	4.21	3.83	3.64	3.32	2.69	2.52	3.21
03160108	Noxubee	1.23	1.24	1.24	1.26	1.28	1.32	1.33	1.30	1.27	1.25	1.24	1.23	1.27
03160109	Mulberry Fork	973.48	1,073.63	1,085.71	1,043.17	850.91	1,136.62	1,125.06	1,122.25	1,070.17	664.31	636.39	968.07	979.15
03160110	Sipsey Fork	9.23	9.38	14.18	9.94	10.54	16.29	24.24	31.88	38.97	38.38	27.35	41.16	22.63
03160111	Locust Fork	63.42	65.98	68.10	70.92	71.74	75.71	79.01	76.42	76.73	72.59	68.29	68.17	71.42
03160112	Upper Black Warrior	33.92	30.56	31.62	38.91	40.10	43.07	48.10	48.82	48.62	42.80	35.08	31.55	39.43
03160113	Lower Black Warrior	444.05	436.82	395.72	295.11	446.96	442.04	443.72	444.51	318.31	330.06	237.96	408.99	387.02
03160201	Middle Tombigbee-Chickasaw	70.67	70.35	61.54	68.79	73.12	72.73	68.21	64.42	66.74	69.70	69.92	69.85	68.84
03160202	Sucarnoochee	2.38	2.41	2.45	2.54	2.67	2.91	2.99	2.90	2.81	2.65	2.42	2.38	2.63
03160203	Lower Tombigbee	119.02	117.37	118.21	119.92	118.85	118.31	120.02	120.36	114.53	111.40	97.48	118.06	116.13
03160204	Mobile-Tensaw	1,012.63	1,172.85	1,069.13	938.34	909.88	1,167.42	1,175.78	1,206.71	940.45	686.65	997.14	985.90	1,021.91
03160205	Mobile Bay	18.24	17.40	22.00	35.98	38.54	44.49	49.85	44.94	46.04	38.96	23.65	17.33	33.12
03170002	Upper Chickasawhay	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.06
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	80.58	73.20	73.55	79.80	79.77	86.57	84.56	84.53	84.51	79.70	74.48	73.34	79.55
03170009	Mississippi Coastal	1.94	1.88	2.25	3.54	3.94	4.74	5.26	4.67	4.55	3.84	2.55	1.87	3.42
06020001	Middle Tennesse-Chickamauga	0.53	0.53	0.56	0.63	0.67	0.75	0.80	0.74	0.72	0.35	0.27	0.25	0.57
06030001	Guntersville Lake	1,372.54	1,242.63	1,095.34	1,080.79	956.65	1,314.78	1,076.64	1,325.81	1,125.53	1,048.81	725.51	832.49	1,099.79
06030002	Wheeler Lake	3,143.35	3,007.02	2,101.36	3,174.52	3,215.08	3,238.93	3,163.76	2,883.92	3,223.31	2,980.87	2,750.33	3,145.91	3,002.36
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	8.97	8.77	9.04	10.10	11.42	13.62	15.42	14.28	11.92	10.29	8.95	8.05	10.90
06030005	Pickwick Lake	1,416.12	1,406.45	1,402.45	1,408.84	1,384.94	1,434.75	1,440.94	1,427.45	1,430.07	1,416.03	874.68	1,308.61	1,362.61
06030006	Bear	11.18	10.33	9.90	10.49	11.25	12.50	13.05	13.27	12.30	11.02	10.62	10.69	11.38

Total Alabama Withdrawals – 2040 (All Sectors)

Total withdrawals in Alabama for 2040 were determined from estimates of water withdrawals from three major sectors – public supply, agriculture (aquaculture, golf courses, irrigation, and livestock), and industrial, thermoelectric, and mining. Total water withdrawals for 2040 are estimated to be 10,331 MGD. Estimates of withdrawal by source indicate that total surface-water withdrawals for 2040 are approximately 95 percent (9,763 MGD), of the total and the remaining 5 percent from groundwater (568 MGD) (figure 13).

Figure 13. Total withdrawals by source, 2040, in MGD.



Total withdrawals for 2040 are listed in tables 5, 6, and 7. For 2040, the industrial, thermoelectric, and mining sector accounts for 86 percent of the total water withdrawals for 2040 (8,899 MGD). The public supply sector accounts for 9 percent of the total water withdrawals for 2040 (968 MGD) and the agriculture sector makes up the remaining 5 percent (463 MGD) (figure 14). The subbasins with the highest total water withdrawals for 2040 are the Wheeler Lake (06030002; 3,569 MGD), the Mobile-Tensaw (03160204; 1,561 MGD), the Mulberry Fork (03160109; 1,492 MGD) and the Lower Coosa (03150107; 1,057 MGD) subbasins (figure 15).

Surface-water withdrawals in the industrial, thermoelectric, and mining sector account for 91 percent of total surface-water withdrawals for 2040. Seventy-eight percent (78%) of the total surface-water withdrawals occur in the Wheeler Lake (06030002; 3,507 MGD), the Mobile-Tensaw (03160204; 1,542 MGD), the Mulberry Fork (03160109; 1,488 MGD), and the Lower Coosa (03150107; 1,047 MGD) subbasins, with the Wheeler Lake subbasin accounting for 36 percent of all surface-water withdrawals.

Groundwater withdrawals in the public supply sector account for 58 percent of the total groundwater withdrawals for 2040. Thirty-nine percent (39%) of the total groundwater withdrawals occur in the Wheeler Lake (06030002; 61 MGD), the Mobile Bay (03160205; 60 MGD), the Middle Coosa (03150106; 50 MGD), and the Upper Alabama (03150201; 49 MGD) subbasins with the Wheeler Lake subbasin accounting for 11 percent of all groundwater withdrawals.

Figure 14. Total withdrawals by sector, 2040, in MGD.

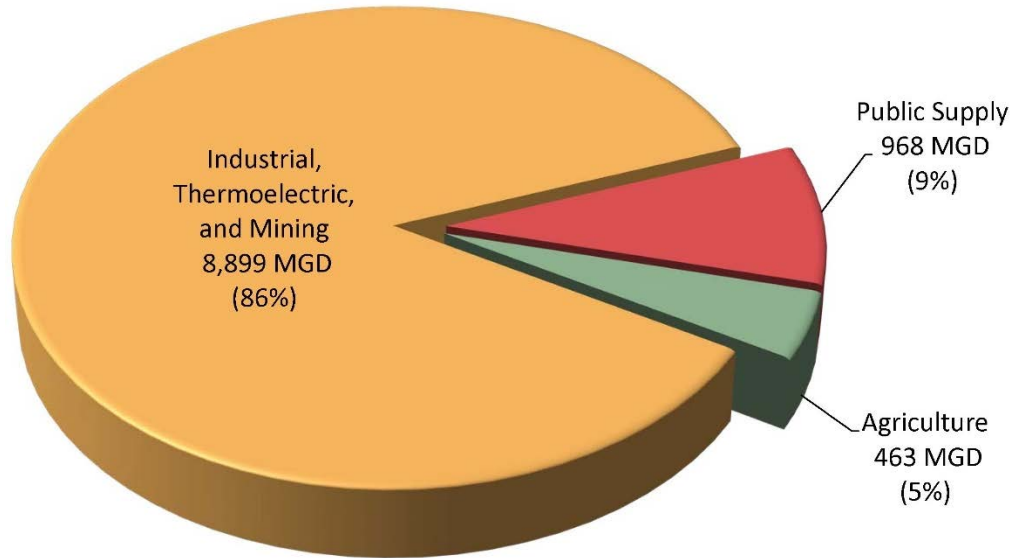


Figure 15. Map of total withdrawals, 2040, in MGD.

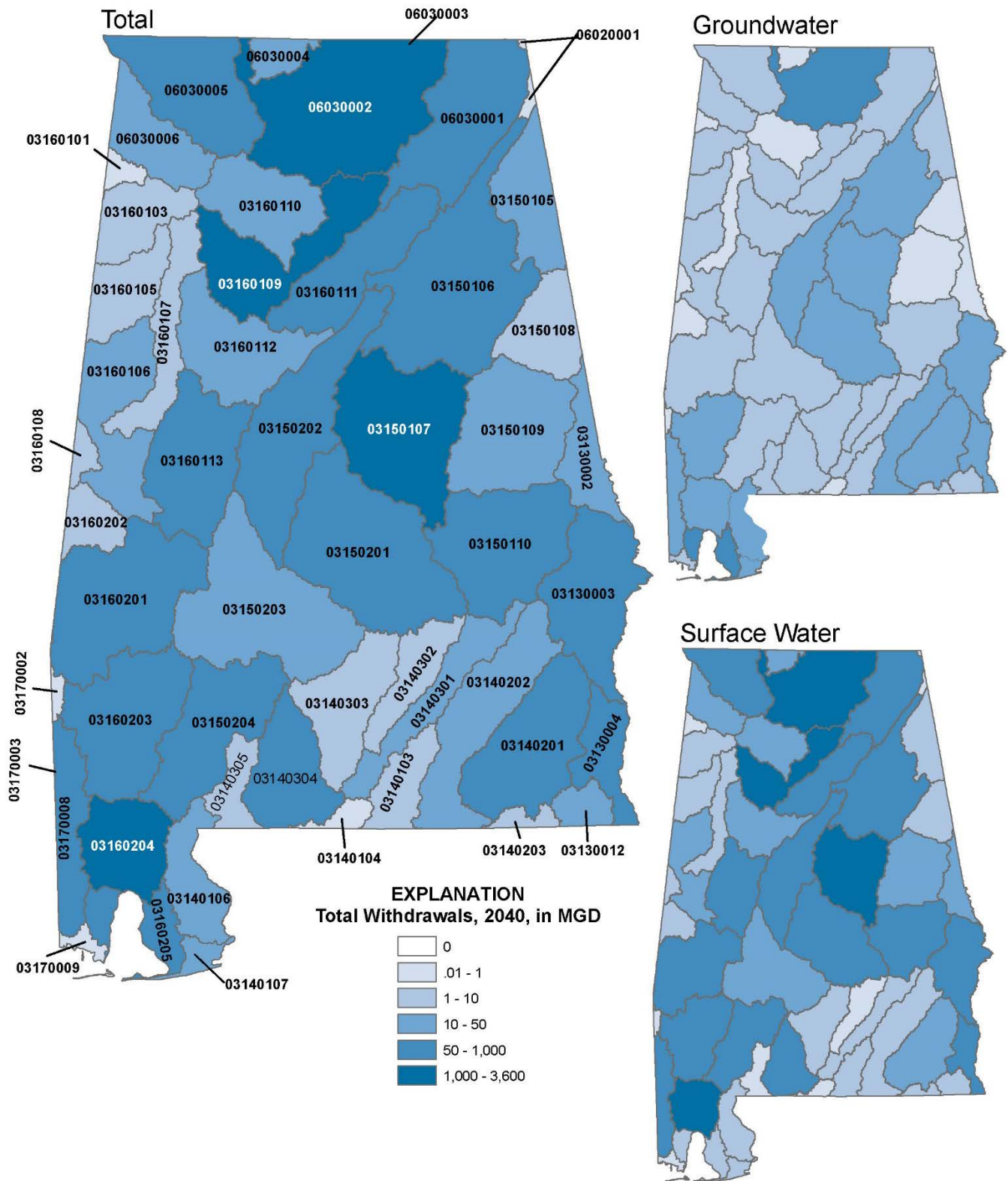


Table 5. Total groundwater withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	0.12	0.12	0.13	0.17	0.21	0.27	0.30	0.25	0.20	0.17	0.13	0.12	0.18
03130003	Middle Chattahoochee-W.F. George Res.	8.77	8.16	8.38	10.27	11.47	13.12	13.72	12.27	11.75	10.18	8.07	7.79	10.33
03130004	Lower Chattahoochee	11.81	12.70	13.21	18.56	22.92	28.73	30.12	26.39	22.47	18.55	15.52	13.69	19.56
03130012	Chipola	5.06	4.16	4.98	8.55	11.62	17.22	19.21	14.82	11.46	8.90	4.76	3.88	9.55
03140103	Yellow	1.91	1.57	1.68	2.48	3.28	4.37	4.82	3.79	2.99	2.58	1.60	1.63	2.72
03140104	Blackwater	0.22	0.17	0.19	0.32	0.46	0.68	0.77	0.59	0.44	0.33	0.19	0.15	0.37
03140106	Perdido	9.19	11.22	16.07	32.13	47.93	75.22	84.21	63.52	43.87	30.89	13.96	10.34	36.55
03140107	Perdido Bay	11.12	10.93	12.15	17.92	22.17	28.54	32.05	25.23	21.30	16.97	10.98	7.83	18.10
03140201	Upper Choctawhatchee	23.45	23.67	29.31	31.41	38.46	45.04	46.27	43.04	41.52	33.32	26.10	24.74	33.86
03140202	Pea	9.02	9.12	9.66	12.34	14.72	18.03	19.45	17.31	15.12	12.48	9.71	8.96	12.99
03140203	Lower Choctawhatchee	0.83	0.82	1.01	1.60	2.26	3.31	3.59	2.82	2.18	1.58	1.01	0.84	1.82
03140301	Upper Conecuh	9.49	7.73	7.82	8.84	9.79	11.26	11.58	10.70	10.40	10.13	7.58	7.48	9.40
03140302	Patsaliga	1.93	1.80	1.71	2.14	2.47	2.93	3.02	2.50	2.31	1.91	1.66	1.61	2.16
03140303	Sepulga	3.50	3.14	3.13	3.22	3.41	3.74	3.91	3.53	3.25	3.15	3.10	3.12	3.35
03140304	Lower Conecuh	6.50	5.67	5.75	6.36	6.72	7.82	8.49	7.20	7.08	6.90	5.76	5.98	6.69
03140305	Escambia	2.84	2.66	2.96	4.01	5.94	7.17	7.77	6.14	4.91	4.05	2.83	2.37	4.47
03150105	Upper Coosa	3.28	2.93	2.83	3.15	3.50	3.88	4.08	3.69	3.45	3.04	2.81	2.89	3.29
03150106	Middle Coosa	51.08	47.26	45.93	47.75	48.86	52.00	54.22	54.12	52.90	48.79	45.29	46.56	49.56
03150107	Lower Coosa	10.77	7.93	8.20	8.98	10.52	12.61	13.32	13.76	12.54	11.35	10.11	7.90	10.67
03150108	Upper Tallapoosa	0.56	0.59	0.65	0.86	1.07	1.43	1.55	1.27	1.02	0.85	0.64	0.58	0.92
03150109	Middle Tallapoosa	0.26	0.26	0.27	0.28	0.29	0.31	0.32	0.30	0.29	0.28	0.27	0.26	0.28
03150110	Lower Tallapoosa	5.49	4.74	6.52	8.61	11.21	16.07	18.91	15.20	11.85	9.07	5.99	5.15	9.90
03150201	Upper Alabama	39.40	33.51	33.28	45.05	56.06	67.06	68.50	62.93	56.33	50.69	39.78	38.05	49.22
03150202	Cahaba	34.84	31.56	32.77	34.38	35.94	37.59	39.47	39.63	39.17	37.30	32.97	32.47	35.67
03150203	Middle Alabama	4.15	3.96	2.92	3.89	4.47	5.94	6.33	5.56	5.88	3.93	3.03	2.87	4.41
03150204	Lower Alabama	2.76	2.53	2.71	3.67	4.39	5.95	6.23	5.27	4.21	3.56	2.56	2.40	3.85
03160101	Upper Tombigbee	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
03160103	Buttahatchee	0.99	0.96	1.24	2.13	3.11	4.81	5.29	4.06	2.90	2.14	1.22	0.98	2.49
03160105	Luxapallila	1.57	1.45	1.36	1.38	1.47	2.12	2.19	2.17	1.82	1.41	1.32	1.41	1.64
03160106	Middle Tombigbee-Lubbub	5.14	4.20	4.70	4.86	5.14	5.52	5.97	5.45	5.33	5.28	4.65	4.78	5.08
03160107	Sipsey	0.88	0.83	0.81	0.88	1.04	1.22	1.29	1.15	0.98	0.93	0.81	0.81	0.97
03160108	Noxubee	0.15	0.17	0.20	0.30	0.40	0.58	0.64	0.50	0.38	0.30	0.19	0.16	0.33
03160109	Mulberry Fork	1.90	1.90	2.13	2.56	3.11	4.08	8.39	3.76	7.01	2.46	1.73	1.95	3.41
03160110	Sipsey Fork	0.66	0.67	0.68	0.72	0.75	0.82	0.84	0.79	0.75	0.72	0.68	0.67	0.73
03160111	Locust Fork	4.14	4.24	4.12	4.14	4.44	4.81	4.92	4.61	5.17	4.67	4.50	4.58	4.53
03160112	Upper Black Warrior	3.52	3.56	3.59	3.60	3.75	3.78	3.83	3.90	3.88	3.56	3.38	3.31	3.64
03160113	Lower Black Warrior	7.32	6.03	6.56	7.73	9.30	11.94	12.71	11.54	10.35	8.52	6.68	6.72	8.78
03160201	Middle Tombigbee-Chickasaw	4.22	3.84	4.06	3.99	4.37	4.88	4.94	4.65	3.77	3.58	3.14	3.52	4.08
03160202	Sucarnoochee	0.43	0.44	0.47	0.48	0.51	0.58	0.61	0.56	0.51	0.47	0.43	0.43	0.49
03160203	Lower Tombigbee	13.63	14.12	14.98	14.82	13.45	12.91	15.86	16.55	14.93	15.16	12.73	13.28	14.37
03160204	Mobile-Tensaw	17.68	17.41	17.43	18.92	20.33	20.38	22.01	19.49	19.16	19.63	16.24	16.41	18.76
03160205	Mobile Bay	25.16	25.39	30.70	53.94	74.74	109.14	121.44	95.23	71.85	54.92	30.47	23.49	59.71
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	8.05	7.28	8.86	14.03	18.61	26.95	29.39	23.58	17.74	13.95	8.42	7.20	15.34
03170009	Mississippi Coastal	1.54	1.57	1.92	3.31	4.52	6.61	7.37	5.84	4.33	3.33	2.06	1.45	3.66
06020001	Middle Tennessee-Chickamauga	0.35	0.35	0.35	0.35	0.36	0.39	0.41	0.40	0.40	0.06	0.06	0.06	0.29
06030001	Guntersville Lake	6.97	6.88	8.73	7.14	8.73	8.16	8.38	10.85	7.61	9.16	5.89	8.04	8.04
06030002	Wheeler Lake	41.80	43.17	46.12	57.97	68.72	85.11	96.38	82.90	66.52	57.41	44.58	43.49	61.18
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.14	0.19	0.29	0.61	0.94	1.51	1.70	1.27	0.87	0.60	0.26	0.17	0.71
06030005	Pickwick Lake	2.22	2.51	3.27	6.67	8.50	12.85	14.38	10.98	7.92	5.80	3.10	2.35	6.71
06030006	Bear	1.80	1.77	1.89	2.36	2.89	3.80	4.10	3.83	2.79	2.35	1.83	1.73	2.59

Table 6. Total surface-water withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	14.49	12.60	12.37	14.40	15.14	15.65	16.94	17.76	18.83	14.23	13.18	13.21	14.90
03130003	Middle Chattahoochee-W.F. George Res.	42.10	43.84	46.72	56.15	64.63	85.73	92.18	77.60	66.33	57.95	46.24	41.75	60.10
03130004	Lower Chattahoochee	68.51	70.97	63.90	64.74	81.15	116.16	127.81	131.65	122.57	94.58	80.54	80.39	91.91
03130012	Chipola	0.34	0.48	0.87	2.05	3.01	4.58	5.27	4.16	3.22	2.18	0.89	0.42	2.29
03140103	Yellow	0.46	0.58	0.84	1.69	2.53	3.94	4.44	3.39	2.43	1.72	0.80	0.52	1.95
03140104	Blackwater	0.05	0.06	0.09	0.18	0.28	0.45	0.50	0.38	0.26	0.18	0.09	0.06	0.22
03140106	Perdido	0.70	1.07	1.87	4.45	7.06	11.40	12.95	9.67	6.69	4.51	1.73	0.88	5.25
03140107	Perdido Bay	0.25	0.38	0.86	2.20	3.11	4.57	5.34	4.40	3.66	2.45	0.95	0.35	2.38
03140201	Upper Choctawhatchee	5.33	6.13	8.36	15.00	20.57	29.68	33.59	27.13	21.55	15.72	8.43	5.82	16.44
03140202	Pea	1.70	2.24	3.37	7.09	10.90	17.28	19.51	14.68	10.26	7.14	3.15	1.96	8.27
03140203	Lower Choctawhatchee	0.24	0.32	0.49	1.04	1.63	2.62	2.95	2.20	1.50	1.04	0.45	0.28	1.23
03140301	Upper Conecuh	2.94	2.99	2.62	4.00	5.65	8.25	8.81	7.89	5.18	4.71	3.29	3.60	5.00
03140302	Patsaliga	0.47	0.51	0.57	0.79	1.03	1.42	1.55	1.25	0.98	0.79	0.56	0.49	0.87
03140303	Sepulga	0.96	1.06	1.60	2.97	3.61	4.56	5.33	4.89	4.69	3.38	1.81	1.07	3.00
03140304	Lower Conecuh	47.08	60.05	59.97	61.09	62.63	62.70	62.67	58.03	58.10	58.56	57.41	58.42	58.89
03140305	Escambia	0.12	0.17	0.30	0.68	1.02	1.59	1.82	1.40	1.03	0.70	0.29	0.15	0.77
03150105	Upper Coosa	3.79	4.01	4.82	7.96	10.78	15.80	17.62	13.81	10.34	7.64	4.47	3.59	8.72
03150106	Middle Coosa	203.09	252.41	238.22	251.04	274.30	344.32	390.58	396.65	271.17	262.15	246.22	259.97	282.51
03150107	Lower Coosa	1,099.68	854.11	888.10	801.40	998.69	1,387.49	1,380.49	884.52	1,039.18	818.20	1,075.59	1,333.95	1,046.78
03150108	Upper Tallapoosa	1.36	1.23	1.23	1.41	1.66	1.94	2.00	1.90	1.68	1.52	1.34	1.30	1.55
03150109	Middle Tallapoosa	17.94	16.19	14.79	16.97	17.12	20.16	22.49	21.90	22.19	18.35	15.35	18.44	18.49
03150110	Lower Tallapoosa	42.07	42.35	43.65	49.88	53.79	61.44	66.62	64.49	59.68	49.16	39.85	35.32	50.69
03150201	Upper Alabama	77.33	77.11	79.03	89.09	92.34	110.56	112.54	107.08	95.85	88.75	79.62	75.75	90.42
03150202	Cahaba	70.99	64.14	63.65	74.72	76.14	75.27	82.23	81.51	81.56	72.36	66.45	64.33	72.78
03150203	Middle Alabama	27.24	28.49	29.67	33.42	38.27	46.15	48.75	43.45	37.23	31.46	27.80	27.14	34.92
03150204	Lower Alabama	56.86	59.56	42.85	60.49	56.46	62.68	66.15	70.04	68.62	60.93	56.13	54.02	59.57
03160101	Upper Tombigbee	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.08
03160103	Buttahatchee	2.24	2.01	1.98	2.10	2.29	2.76	2.94	2.71	2.51	2.32	2.00	2.11	2.33
03160105	Luxapallila	2.10	2.00	2.05	2.40	2.61	3.12	3.26	3.07	2.82	2.47	2.03	1.99	2.49
03160106	Middle Tombigbee-Lubbub	9.58	9.65	9.82	10.36	10.88	11.73	12.05	11.42	10.85	10.39	9.81	9.62	10.51
03160107	Sipsey	1.02	1.07	1.17	1.50	1.80	2.28	2.48	2.13	1.82	1.53	1.17	1.05	1.59
03160108	Noxubee	1.05	1.06	1.07	1.10	1.14	1.21	1.23	1.18	1.14	1.10	1.07	1.05	1.12
03160109	Mulberry Fork	1,474.16	1,634.01	1,656.84	1,586.80	1,286.95	1,727.54	1,705.13	1,709.23	1,628.90	1,004.73	961.88	1,483.75	1,488.33
03160110	Sipsey Fork	7.62	7.72	12.46	7.80	7.98	13.08	20.87	29.08	36.64	36.38	25.74	39.75	20.43
03160111	Locust Fork	60.50	63.09	65.72	68.73	68.96	72.45	75.93	73.68	73.35	69.60	65.56	65.09	68.55
03160112	Upper Black Warrior	34.44	30.66	31.15	37.87	39.05	41.91	46.86	47.98	47.63	42.10	35.00	32.02	38.89
03160113	Lower Black Warrior	662.05	654.03	590.01	435.31	672.25	667.49	670.92	668.83	469.91	488.18	345.08	609.19	577.77
03160201	Middle Tombigbee-Chickasaw	51.94	41.46	51.03	54.41	52.02	50.96	47.79	49.09	49.89	51.59	52.86	53.11	50.51
03160202	Sucarnoochee	3.12	3.13	3.17	3.26	3.30	3.52	3.57	3.55	3.55	3.45	3.34	3.13	3.34
03160203	Lower Tombigbee	148.50	146.43	147.03	149.48	149.27	149.04	148.61	147.85	141.50	136.99	120.05	147.80	144.38
03160204	Mobile-Tensaw	1,543.68	1,792.66	1,626.83	1,408.81	1,360.62	1,754.40	1,761.17	1,817.98	1,402.97	1,014.06	1,515.17	1,502.86	1,541.77
03160205	Mobile Bay	1.06	1.63	3.45	8.64	12.52	18.78	21.81	17.58	14.10	9.44	3.68	1.45	9.51
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	86.94	79.54	79.16	84.15	83.82	90.50	87.77	88.34	88.36	83.65	80.22	79.35	84.32
03170009	Mississippi Coastal	0.07	0.09	0.18	0.44	0.59	0.83	0.98	0.83	0.73	0.50	0.21	0.09	0.46
06020001	Middle Tennessee-Chickamauga	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
06030001	Guntersville Lake	49.30	47.19	46.17	49.37	51.76	57.31	63.28	61.27	58.88	53.83	48.49	48.93	52.98
06030002	Wheeler Lake	3,672.31	3,510.45	2,443.32	3,706.61	3,756.76	3,789.56	3,699.54	3,369.52	3,770.96	3,483.83	3,210.74	3,675.02	3,507.39
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	11.11	10.78	11.09	12.19	13.33	15.32	17.45	16.61	14.25	12.46	11.04	9.91	12.96
06030005	Pickwick Lake	160.46	157.99	171.91	197.79	208.28	212.67	218.74	185.31	211.20	207.15	194.96	187.81	192.86
06030006	Bear	9.28	8.61	8.43	9.79	11.25	13.69	14.68	13.58	12.16	10.31	9.15	8.93	10.82

Table 7. Total water withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	14.61	12.72	12.51	14.57	15.34	15.93	17.24	18.01	19.03	14.40	13.31	13.33	15.08
03130003	Middle Chattahoochee-W.F. George Res.	50.87	52.00	55.09	66.42	76.10	98.85	105.90	89.87	78.07	68.13	54.31	49.55	70.43
03130004	Lower Chattahoochee	80.32	83.67	77.11	83.30	104.07	144.89	157.92	158.03	145.04	113.13	96.07	94.08	111.47
03130012	Chipola	5.40	4.64	5.85	10.59	14.63	21.80	24.48	18.99	14.68	11.09	5.65	4.31	11.84
03140103	Yellow	2.37	2.15	2.52	4.17	5.81	8.31	9.26	7.17	5.42	4.29	2.40	2.15	4.67
03140104	Blackwater	0.27	0.23	0.28	0.50	0.74	1.12	1.27	0.97	0.70	0.51	0.27	0.20	0.59
03140106	Perdido	9.90	12.29	17.94	36.59	54.99	86.63	97.16	73.20	50.57	35.40	15.69	11.23	41.80
03140107	Perdido Bay	11.37	11.31	13.02	20.12	25.28	33.11	37.39	29.63	24.97	19.41	11.93	8.18	20.48
03140201	Upper Choctawhatchee	28.78	29.80	37.67	46.41	59.03	74.72	79.86	70.17	63.07	49.04	34.53	30.56	50.30
03140202	Pea	10.71	11.36	13.03	19.43	25.63	35.31	38.96	31.99	25.38	19.62	12.86	10.91	21.27
03140203	Lower Choctawhatchee	1.07	1.14	1.50	2.65	3.89	5.93	6.54	5.01	3.68	2.62	1.46	1.12	3.05
03140301	Upper Conecuh	12.43	10.72	10.44	12.84	15.44	19.52	20.39	18.58	15.57	14.84	10.87	11.09	14.40
03140302	Patsaliga	2.41	2.31	2.28	2.94	3.49	4.35	4.57	3.75	3.29	2.70	2.22	2.09	3.03
03140303	Sepulga	4.47	4.20	4.74	6.20	7.02	8.30	9.24	8.42	7.94	6.53	4.90	4.19	6.35
03140304	Lower Conecuh	53.58	65.72	65.73	67.45	69.35	70.52	71.17	65.23	65.18	65.46	63.17	64.40	65.58
03140305	Escambia	2.97	2.84	3.26	4.69	6.96	8.76	9.59	7.55	5.94	4.76	3.12	2.52	5.25
03150105	Upper Coosa	7.07	6.94	7.66	11.10	14.28	19.68	21.70	17.49	13.79	10.68	7.27	6.49	12.01
03150106	Middle Coosa	254.17	299.67	284.15	298.78	323.17	396.32	444.80	450.77	324.07	310.94	291.51	306.53	332.07
03150107	Lower Coosa	1,110.45	862.04	896.30	810.38	1,009.22	1,400.10	1,393.81	898.28	1,051.71	829.55	1,085.70	1,341.86	1,057.45
03150108	Upper Tallapoosa	1.92	1.82	1.89	2.26	2.73	3.37	3.54	3.17	2.71	2.38	1.98	1.88	2.47
03150109	Middle Tallapoosa	18.20	16.45	15.06	17.25	17.41	20.47	22.81	22.20	22.47	18.62	15.62	18.70	18.77
03150110	Lower Tallapoosa	47.56	47.09	50.16	58.49	65.00	77.50	85.53	79.68	71.53	58.23	45.84	40.47	60.59
03150201	Upper Alabama	116.73	110.61	112.31	134.13	148.39	177.63	181.03	170.02	152.18	139.45	119.40	113.80	139.64
03150202	Cahaba	105.84	95.70	96.42	109.10	112.08	112.86	121.70	121.14	120.73	109.66	99.42	96.80	108.45
03150203	Middle Alabama	31.39	32.45	32.58	37.31	42.74	52.09	55.08	49.01	43.11	35.39	30.83	30.01	39.33
03150204	Lower Alabama	59.62	62.09	45.56	64.16	60.85	68.63	72.38	75.30	72.83	64.50	58.70	56.41	63.42
03160101	Upper Tombigbee	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16
03160103	Buttahatchee	3.23	2.97	3.22	4.23	5.40	7.57	8.23	6.77	5.41	4.45	3.21	3.09	4.82
03160105	Luxapallila	3.67	3.45	3.41	3.78	4.08	5.24	5.44	5.25	4.64	3.88	3.34	3.41	4.13
03160106	Middle Tombigbee-Lubbub	14.72	13.85	14.52	15.22	16.01	17.25	18.02	16.87	16.18	15.67	14.46	14.40	15.60
03160107	Sipsey	1.90	1.90	1.99	2.38	2.83	3.50	3.77	3.28	2.79	2.46	1.98	1.86	2.55
03160108	Noxubee	1.20	1.22	1.27	1.40	1.55	1.79	1.87	1.69	1.51	1.40	1.26	1.21	1.45
03160109	Mulberry Fork	1,476.06	1,635.91	1,658.97	1,589.36	1,290.06	1,731.62	1,713.52	1,712.99	1,635.90	1,007.19	963.61	1,485.69	1,491.74
03160110	Sipsey Fork	8.28	8.39	13.14	8.51	8.73	13.90	21.71	29.87	37.38	37.10	26.42	40.41	21.15
03160111	Locust Fork	64.64	67.33	69.84	72.87	73.40	77.26	80.85	78.29	78.52	74.27	70.06	69.67	73.08
03160112	Upper Black Warrior	37.96	34.22	34.74	41.46	42.81	45.69	50.69	51.89	51.51	45.66	38.39	35.33	42.53
03160113	Lower Black Warrior	669.37	660.06	596.56	443.04	681.55	679.43	683.63	680.37	480.26	496.70	351.76	615.92	586.55
03160201	Middle Tombigbee-Chickasaw	56.16	45.30	55.08	58.40	56.39	55.84	52.72	53.74	53.66	55.17	56.01	56.63	54.59
03160202	Sucamoochee	3.55	3.57	3.64	3.74	3.82	4.10	4.18	4.11	4.06	3.92	3.77	3.55	3.83
03160203	Lower Tombigbee	162.13	160.55	162.01	164.31	162.72	161.95	164.47	164.40	156.43	152.14	132.78	161.08	158.75
03160204	Mobile-Tensaw	1,561.36	1,810.07	1,644.26	1,427.73	1,380.95	1,774.78	1,783.18	1,837.48	1,422.13	1,033.69	1,531.41	1,519.26	1,560.52
03160205	Mobile Bay	26.23	27.02	34.15	62.58	87.26	127.92	143.25	112.81	85.95	64.36	34.15	24.93	69.22
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	94.99	86.81	88.02	98.18	102.43	117.46	117.16	111.93	106.10	97.60	88.64	86.56	99.66
03170009	Mississippi Coastal	1.60	1.66	2.11	3.75	5.11	7.44	8.35	6.68	5.07	3.83	2.27	1.54	4.12
06020001	Middle Tennessee-Chickamauga	0.42	0.41	0.42	0.42	0.43	0.46	0.48	0.47	0.46	0.13	0.13	0.13	0.36
06030001	Guntersville Lake	56.27	54.06	54.90	56.51	60.48	65.47	71.66	72.12	66.49	62.99	54.38	56.97	61.03
06030002	Wheeler Lake	3,714.11	3,553.62	2,489.44	3,764.58	3,825.49	3,874.67	3,795.92	3,452.42	3,837.48	3,541.24	3,255.32	3,718.51	3,568.57
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	11.26	10.98	11.38	12.80	14.27	16.83	19.14	17.88	15.12	13.07	11.31	10.08	13.67
06030005	Pickwick Lake	162.68	160.50	175.18	204.47	216.78	225.52	233.11	196.28	219.13	212.95	198.06	190.16	199.57
06030006	Bear	11.08	10.38	10.32	12.15	14.14	17.48	18.77	17.41	14.95	12.67	10.98	10.67	13.42

Total Withdrawals Comparing 2010 to 2040

The comparison of groundwater, surface, and total withdrawals from 2010 to 2040 is shown in table 8. Total withdrawals increase from 9,999 MGD in 2010 to 10,331 MGD in 2040 an increase of 332 MGD (3%) (figure 16). The Wheeler Lake (06030002; 566 MGD), the Mobile-Tensaw (03160204; 539 MGD), and the Mulberry Fork (03160109; 513 MGD) subbasins have the largest increases in total withdrawals from 2010 to 2040 – primarily in the industrial, thermoelectric, and mining sector. The Pickwick Lake (06030005; -1,163 MGD) and the Guntersville Lake (06030001; -1,039 MGD) subbasins have the largest decreases in withdrawals from 2010 to 2040 primarily due to the closure of the Colbert Fossil and Widows Creek Fossil coal fired thermoelectric plants that were operated by TVA (figures 17 and 18).

Surface-water withdrawals increase 218 MGD from 9,545 MGD in 2010 to 9,763 MGD in 2040. The Mobile-Tensaw (03160204; 548 MGD), the Wheeler Lake (06030002; 546 MGD) the Mulberry Fork (03160109; 513 MGD), and the Lower Coosa (03150107; 368 MGD) subbasins have the largest increases in surface-water withdrawals from 2010 to 2040 – primarily in the industrial, thermoelectric, and mining sector. The Pickwick Lake (06030005; -1,165 MGD) and the Guntersville Lake (06030001; -1,038 MGD) subbasins have the largest decreases in surface-water withdrawals from 2010 to 2040 primarily due to the closure of the Colbert Fossil and Widows Creek Fossil coal fired thermoelectric plants that were operated by TVA.

Groundwater withdrawals increase 113 MGD from 454 MGD in 2010 to 568 MGD in 2040. The Mobile Bay (03160205; 32 MGD), the Wheeler Lake (06030002; 20 MGD), and the Perdido (03140106; 20 MGD) subbasins have the largest increases in groundwater withdrawals from 2010 to 2040. The Mobile-Tensaw (03160204; -9 MGD) and the Lower Alabama (03150204; -2 MGD) subbasins have the largest decreases in withdrawals from 2010 to 2040.

Figure 16. Comparison of water withdrawals, 2010 to 2040, in MGD.

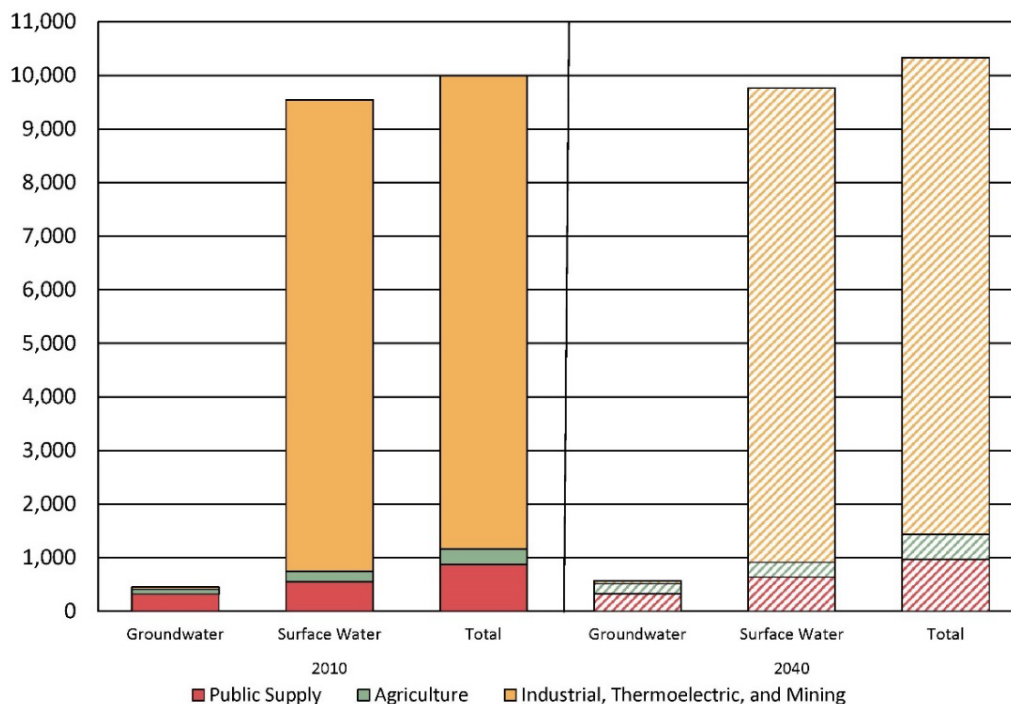


Figure 17. Map of total withdrawal comparison, 2010 to 2040, in MGD.

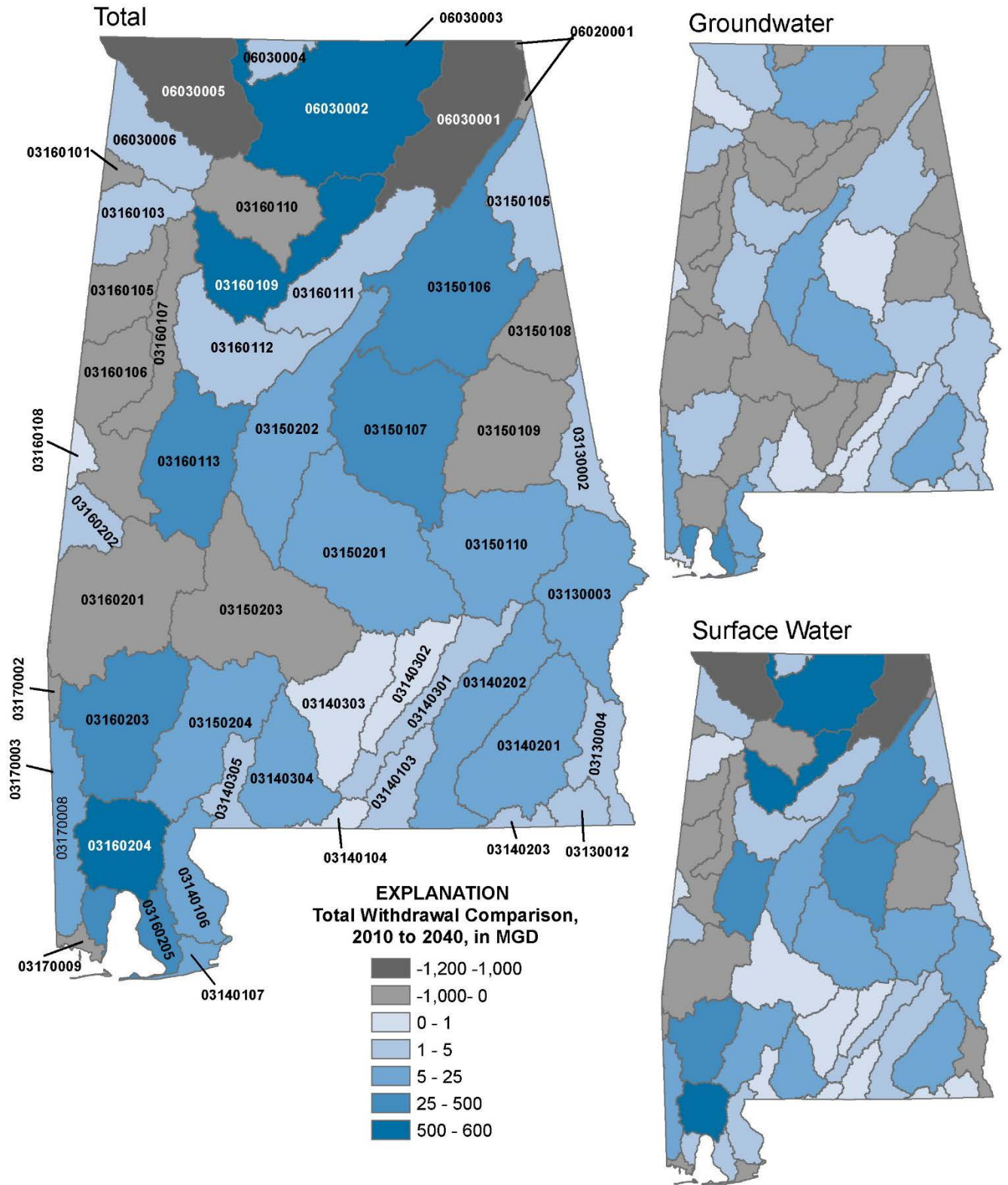


Figure 18. Change in total withdrawals, 2010 to 2040, by rank, in MGD.

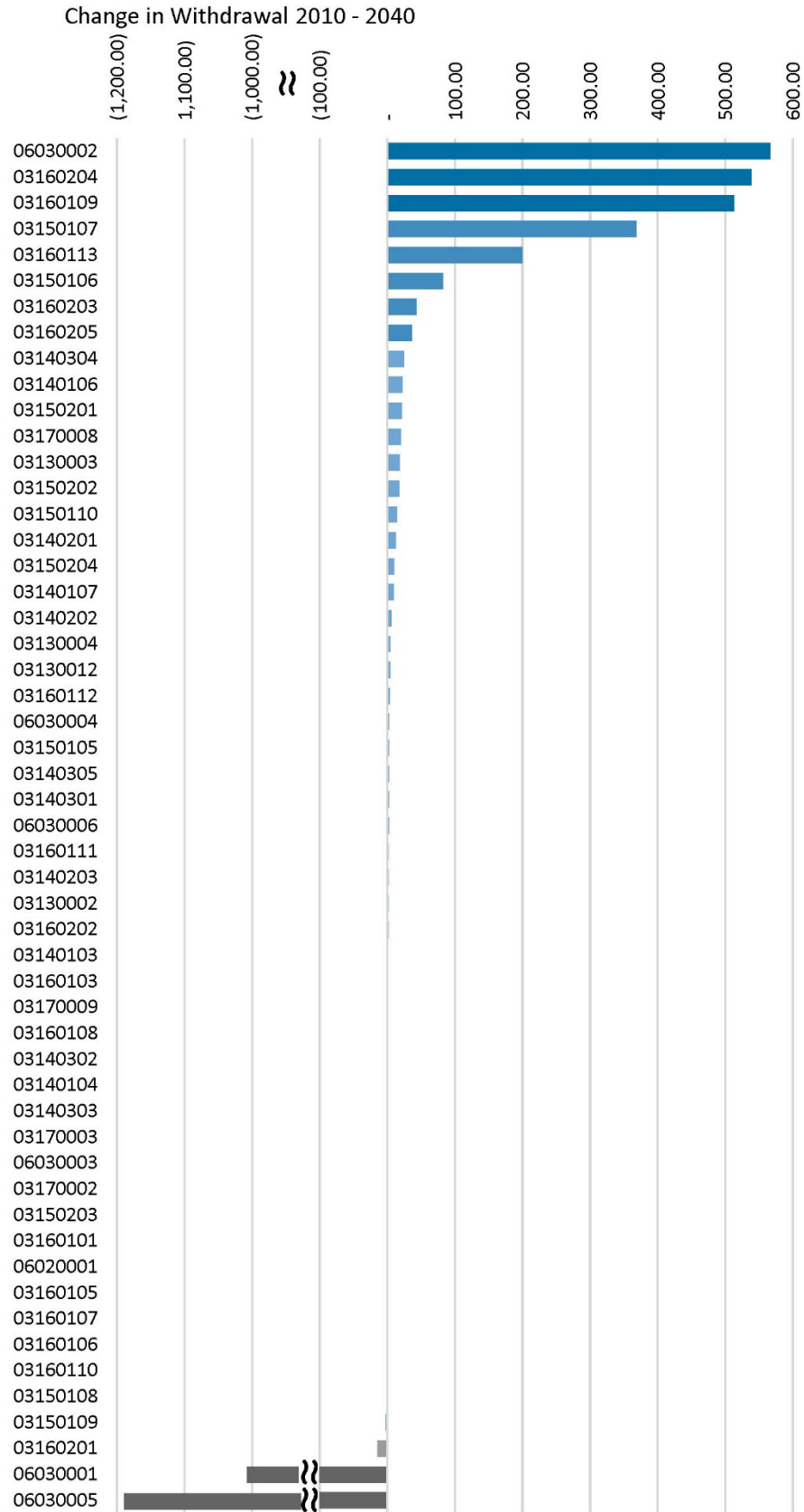


Table 8. Total withdrawal comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	Groundwater				Surface Water				Total Withdrawals			
		2010 Average	2040 Average	Change in Withdrawals	Percent Change	2010 Average	2040 Average	Change in Withdrawals	Percent Change	2010 Average	2040 Average	Change in Withdrawals	Percent Change
03130002	Middle Chattahoochee-Lake Harding	0.98	0.18	-0.79	-81%	12.89	14.90	2.01	16%	13.86	15.08	1.22	9%
03130003	Middle Chattahoochee-W.F. George Res.	8.22	10.33	2.11	26%	44.02	60.10	16.08	37%	52.24	70.43	18.19	35%
03130004	Lower Chattahoochee	15.00	19.56	4.55	30%	92.19	91.91	-0.27	0%	107.19	111.47	4.28	4%
03130012	Chipola	6.74	9.55	2.81	42%	1.38	2.29	0.91	65%	8.13	11.84	3.72	46%
03140103	Yellow	2.49	2.72	0.23	9%	1.03	1.95	0.92	90%	3.52	4.67	1.15	33%
03140104	Blackwater	0.38	0.37	-0.01	-3%	0.14	0.22	0.07	50%	0.53	0.59	0.06	12%
03140106	Perdido	16.81	36.55	19.74	117%	2.23	5.25	3.02	136%	19.04	41.80	22.76	120%
03140107	Perdido Bay	9.47	18.10	8.63	91%	1.50	2.38	0.88	59%	10.96	20.48	9.51	87%
03140201	Upper Choctawhatchee	27.33	33.86	6.53	24%	10.27	16.44	6.18	60%	37.60	50.30	12.71	34%
03140202	Pea	11.03	12.99	1.96	18%	4.00	8.27	4.27	107%	15.04	21.27	6.23	41%
03140203	Lower Choctawhatchee	1.21	1.82	0.61	51%	0.47	1.23	0.76	160%	1.68	3.05	1.37	82%
03140301	Upper Conecuh	8.82	9.40	0.58	7%	3.53	5.00	1.46	41%	12.35	14.40	2.04	17%
03140302	Patsaliga	2.23	2.16	-0.06	-3%	0.72	0.87	0.15	21%	2.95	3.03	0.09	3%
03140303	Sepulga	4.02	3.35	-0.67	-17%	2.31	3.00	0.69	30%	6.33	6.35	0.02	0%
03140304	Lower Conecuh	6.66	6.69	0.02	0%	34.33	58.89	24.57	72%	40.99	65.58	24.59	60%
03140305	Escambia	2.93	4.47	1.54	53%	0.26	0.77	0.52	204%	3.18	5.25	2.06	65%
03150105	Upper Coosa	3.85	3.29	-0.56	-15%	5.56	8.72	3.16	57%	9.41	12.01	2.60	28%
03150106	Middle Coosa	47.19	49.56	2.37	5%	202.73	282.51	79.78	39%	249.92	332.07	82.15	33%
03150107	Lower Coosa	9.83	10.67	0.84	9%	679.00	1,046.78	367.79	54%	688.83	1,057.45	368.62	54%
03150108	Upper Tallapoosa	2.51	0.92	-1.59	-63%	1.70	1.55	-0.15	-9%	4.21	2.47	-1.74	-41%
03150109	Middle Tallapoosa	1.89	0.28	-1.61	-85%	19.10	18.49	-0.61	-3%	20.98	18.77	-2.21	-11%
03150110	Lower Tallapoosa	7.80	9.90	2.10	27%	38.24	50.69	12.45	33%	46.04	60.59	14.55	32%
03150201	Upper Alabama	40.89	49.22	8.33	20%	76.95	90.42	13.47	17%	117.85	139.64	21.79	18%
03150202	Cahaba	30.17	35.67	5.50	18%	60.89	72.78	11.89	20%	91.06	108.45	17.40	19%
03150203	Middle Alabama	4.80	4.41	-0.39	-8%	34.62	34.92	0.31	1%	39.42	39.33	-0.09	0%
03150204	Lower Alabama	5.96	3.85	-2.10	-35%	47.15	59.57	12.41	26%	53.11	63.42	10.31	19%
03160101	Upper Tombigbee	0.21	0.08	-0.13	-62%	0.11	0.08	-0.04	-33%	0.32	0.16	-0.17	-52%
03160103	Buttahatchee	1.41	2.49	1.08	76%	2.32	2.33	0.01	0%	3.73	4.82	1.08	29%
03160105	Luxapallila	2.18	1.64	-0.54	-25%	2.51	2.49	-0.02	-1%	4.69	4.13	-0.56	-12%
03160106	Middle Tombigbee-Lubbub	5.77	5.08	-0.69	-12%	10.97	10.51	-0.46	-4%	16.74	15.60	-1.15	-7%
03160107	Sipsey	1.57	0.97	-0.60	-38%	1.64	1.59	-0.06	-4%	3.21	2.55	-0.66	-21%
03160108	Noxubee	0.18	0.33	0.15	88%	1.09	1.12	0.03	2%	1.27	1.45	0.18	14%
03160109	Mulberry Fork	3.52	3.41	-0.10	-3%	975.63	1,488.33	512.70	53%	979.15	1,491.74	512.59	52%
03160110	Sipsey Fork	1.75	0.73	-1.03	-58%	20.87	20.43	-0.45	-2%	22.63	21.15	-1.47	-7%
03160111	Locust Fork	5.38	4.53	-0.85	-16%	66.04	68.55	2.52	4%	71.42	73.08	1.66	2%
03160112	Upper Black Warrior	2.51	3.64	1.13	45%	36.92	38.89	1.97	5%	39.43	42.53	3.10	8%
03160113	Lower Black Warrior	6.17	8.78	2.61	42%	380.85	577.77	196.92	52%	387.02	586.55	199.53	52%
03160201	Middle Tombigbee-Chickasaw	5.70	4.08	-1.62	-28%	63.13	50.51	-12.62	-20%	68.84	54.59	-14.24	-21%
03160202	Sucarnoochee	0.56	0.49	-0.06	-12%	2.07	3.34	1.27	61%	2.63	3.83	1.21	46%
03160203	Lower Tombigbee	12.53	14.37	1.84	15%	103.60	144.38	40.78	39%	116.13	158.75	42.62	37%
03160204	Mobile-Tensaw	27.67	18.76	-8.92	-32%	994.24	1,541.77	547.53	55%	1,021.91	1,560.52	538.62	53%
03160205	Mobile Bay	27.89	59.71	31.81	114%	5.22	9.51	4.29	82%	33.12	69.22	36.10	109%
03170002	Upper Chickasawhay	0.05	0.00	-0.04	-91%	0.01	0.01	0.00	-10%	0.06	0.01	-0.04	-76%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
03170008	Escatawpa	8.64	15.34	6.70	77%	70.91	84.32	13.41	19%	79.55	99.66	20.11	25%
03170009	Mississippi Coastal	3.03	3.66	0.63	21%	0.39	0.46	0.07	19%	3.42	4.12	0.70	20%
06020001	Middle Tennessee-Chickamauga	0.41	0.29	-0.12	-28%	0.16	0.07	-0.09	-56%	0.57	0.36	-0.20	-36%
06030001	Guntersville Lake	8.95	8.04	-0.91	-10%	1,090.84	52.98	-1,037.86	-95%	1,099.79	61.03	-1,038.77	-94%
06030002	Wheeler Lake	40.76	61.18	20.42	50%	2,961.61	3,507.39	545.78	18%	3,002.36	3,568.57	566.20	19%
06030003	Elk	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
06030004	Lower Elk	0.90	0.71	-0.18	-20%	10.01	12.96	2.96	30%	10.90	13.67	2.77	25%
06030005	Pickwick Lake	4.72	6.71	1.99	42%	1,357.89	192.86	-1,165.04	-86%	1,362.61	199.57	-1,163.04	-85%
06030006	Bear	2.44	2.59	0.16	6%	8.94	10.82	1.88	21%	11.38	13.42	2.03	18%

Public-Supply Withdrawals

Public-Supply and Residential Withdrawals – 2010

Total public-supply and residential withdrawals for 2010 were derived from the 2010 Report. Total statewide public-supply and residential withdrawals for 2010 were estimated to be 9 percent (870 MGD) of the total water withdrawals. Estimates of withdrawal by source indicate that the public-supply and residential surface-water withdrawals were approximately 63 percent (552 MGD) of the total public-supply and residential withdrawals with groundwater making up the remaining 37 percent (318 MGD) (figure 19). These numbers vary slightly from the 2010 Report due to the additional analysis of residential water use as the subbasin level, which was not included in the 2010 Report.

Total public-supply and residential withdrawals for 2010 are listed in tables 9, 10, and 11. Forty-seven percent (47%) of the public-supply and residential total withdrawals occurred in the Wheeler Lake (06030002; 113 MGD), the Cahaba (03150202; 81 MGD), the Escatawpa (03170008; 76 MGD), the Middle Coosa (03150106; 72 MGD), and the Locust Fork (03160111; 67 MGD) subbasins, with the Wheeler Lake subbasin accounting for 13 percent of the total public-supply and residential withdrawals.

Surface-water public-supply and residential withdrawals accounted for 63 percent (552 MGD) of the total public supply and residential sector. Forty-eight percent (48%) of the surface-water withdrawals for the public supply and residential sector occurred in the Wheeler Lake (06030002; 79 MGD), the Escatawpa (03170008; 70 MGD), the Locust Fork (03160111; 63 MGD), and the Cahaba (03150202; 52 MGD) subbasins with the Wheeler Lake subbasin accounting for 14 percent of all surface-water public and residential withdrawals.

Groundwater withdrawals in the public supply and residential sector accounted for 37 percent of the total public-supply and residential groundwater withdrawals. Forty-three percent (43%) of the groundwater withdrawals for the public supply and residential sector occurred in the Middle Coosa (03150106; 41 MGD), the Wheeler Lake (06030002; 34 MGD), the Upper Alabama (03150201; 33 MGD), and the Cahaba (03150202; 28 MGD) subbasins, with the Middle Coosa subbasin accounting for 13 percent of the groundwater withdrawals for the public supply and residential sector.

Figure 19. Public-supply and residential withdrawals by source, 2010, in MGD.

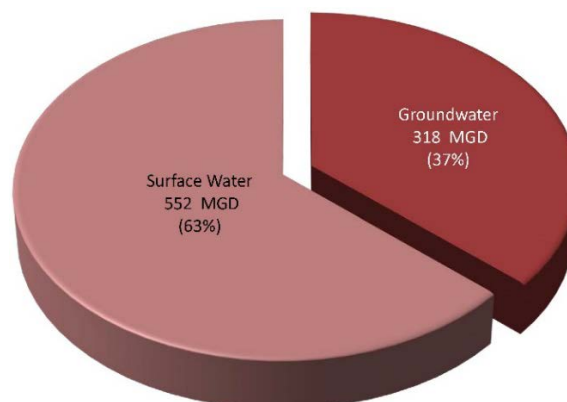


Figure 20. Map of public-supply withdrawals, 2010, in MGD.

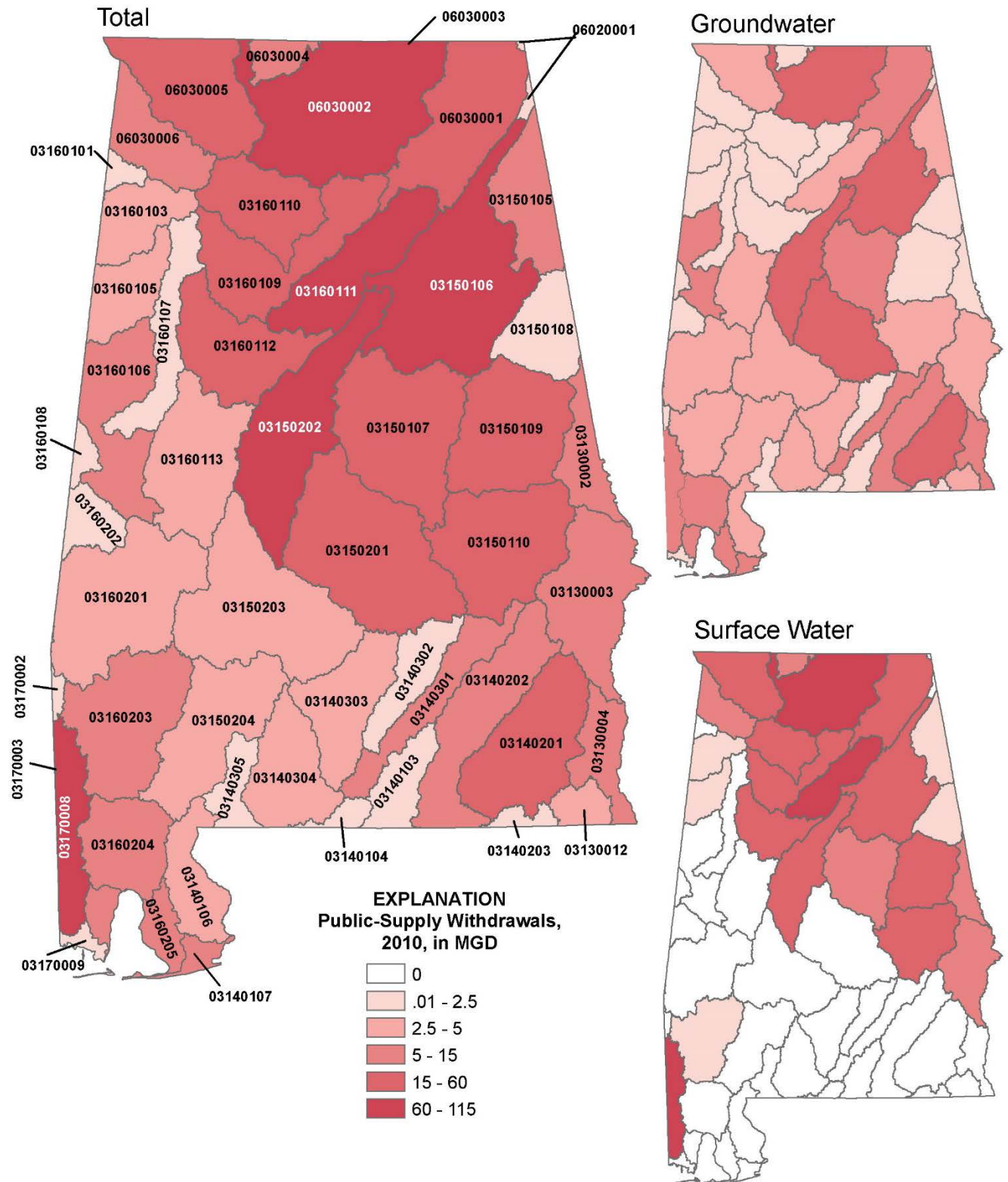


Table 9. Public-supply and residential groundwater withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
03130003	Middle Chattahoochee-W.F. George Res.	4.44	3.80	3.74	4.46	4.68	4.63	4.69	4.53	4.84	4.33	3.72	3.68	4.30
03130004	Lower Chattahoochee	9.26	9.61	9.13	10.76	11.34	11.05	10.48	11.28	11.64	10.78	11.30	10.66	10.61
03130012	Chipola	3.80	2.78	2.73	3.21	3.17	3.44	3.61	3.31	3.57	3.49	2.73	2.75	3.22
03140103	Yellow	2.01	1.60	1.54	1.79	2.00	2.12	2.23	1.95	1.85	1.88	1.51	1.69	1.85
03140104	Blackwater	0.24	0.17	0.16	0.17	0.17	0.17	0.19	0.18	0.19	0.17	0.17	0.16	0.18
03140106	Perdido	4.63	4.40	4.60	5.16	4.76	4.72	4.50	4.68	4.36	4.20	3.78	4.70	4.54
03140107	Perdido Bay	6.09	5.65	5.72	6.93	7.11	6.98	7.73	6.68	7.11	6.37	5.18	4.00	6.29
03140201	Upper Choctawhatchee	18.26	18.35	22.29	21.29	24.57	25.45	24.75	25.69	27.35	22.99	19.64	19.24	22.49
03140202	Pea	7.36	7.05	6.99	7.68	8.08	7.92	8.20	8.52	8.73	7.82	7.10	7.07	7.71
03140203	Lower Choctawhatchee	0.73	0.64	0.67	0.72	0.80	0.89	0.85	0.81	0.84	0.70	0.70	0.70	0.75
03140301	Upper Conecuh	8.76	7.06	6.99	7.43	7.78	8.24	8.23	8.10	8.45	8.62	6.80	6.87	7.78
03140302	Patsaliga	1.70	1.55	1.41	1.65	1.77	1.90	1.88	1.62	1.66	1.42	1.37	1.37	1.61
03140303	Sepulga	3.73	3.31	3.26	3.26	3.37	3.59	3.63	3.39	3.18	3.17	3.15	3.23	3.36
03140304	Lower Conecuh	4.67	3.72	3.73	4.10	4.20	4.64	5.44	4.39	4.48	4.60	3.74	3.99	4.31
03140305	Escambia	2.66	2.31	2.31	2.35	3.27	2.67	2.66	2.39	2.42	2.40	2.25	2.08	2.48
03150105	Upper Coosa	3.54	3.22	3.11	3.32	3.57	3.78	3.93	3.66	3.54	3.22	3.09	3.19	3.43
03150106	Middle Coosa	42.94	39.69	38.22	39.33	40.09	42.24	44.37	44.56	43.95	40.81	38.21	39.43	41.15
03150107	Lower Coosa	9.21	6.93	6.94	6.87	7.35	7.77	7.92	9.15	9.05	8.69	8.45	6.96	7.94
03150108	Upper Tallapoosa	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
03150109	Middle Tallapoosa	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
03150110	Lower Tallapoosa	3.88	3.00	3.76	3.35	3.21	3.35	4.33	4.22	4.17	3.71	3.50	3.48	3.66
03150201	Upper Alabama	31.28	25.54	24.16	30.45	35.59	38.05	36.80	37.48	36.67	35.19	29.89	29.50	32.55
03150202	Cahaba	27.74	25.08	26.03	27.25	28.43	29.61	31.09	31.32	31.05	29.61	26.20	25.82	28.27
03150203	Middle Alabama	5.07	4.70	3.18	3.48	3.25	3.47	3.42	3.68	5.17	3.54	3.38	3.46	3.81
03150204	Lower Alabama	2.81	2.44	2.41	2.66	2.58	2.87	2.68	2.73	2.58	2.54	2.29	2.35	2.58
03160101	Upper Tombigbee	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
03160103	Buttahatchee	1.26	1.07	1.10	1.09	1.14	1.28	1.22	1.19	1.14	1.11	1.14	1.18	1.16
03160105	Luxapallila	2.13	1.94	1.87	1.87	1.94	1.95	2.10	2.24	1.97	1.90	1.83	1.94	1.97
03160106	Middle Tombigbee-Lubbub	5.43	4.42	4.90	4.94	5.08	5.23	5.61	5.26	5.32	5.38	4.87	5.05	5.12
03160107	Sipsey	1.31	1.25	1.20	1.16	1.22	1.23	1.24	1.24	1.18	1.21	1.20	1.23	1.22
03160108	Noxubee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160109	Mulberry Fork	1.67	1.60	1.67	1.58	1.59	1.64	1.65	1.70	1.62	1.50	1.33	1.68	1.60
03160110	Sipsey Fork	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
03160111	Locust Fork	3.56	3.51	3.51	3.41	3.39	3.61	3.64	3.49	4.12	3.92	3.88	4.05	3.67
03160112	Upper Black Warrior	1.38	1.40	1.41	1.34	1.40	1.28	1.28	1.46	1.53	1.31	1.23	1.18	1.35
03160113	Lower Black Warrior	5.57	4.31	4.43	4.26	4.42	4.61	4.60	5.13	5.53	4.99	4.62	5.00	4.79
03160201	Middle Tombigbee-Chickasaw	5.54	5.03	5.20	4.81	4.94	5.01	4.89	4.96	4.28	4.31	4.11	4.67	4.81
03160202	Sucarnoochee	0.10	0.11	0.13	0.10	0.09	0.09	0.10	0.10	0.10	0.09	0.09	0.09	0.10
03160203	Lower Tombigbee	5.17	4.45	4.30	4.47	4.77	4.84	4.84	5.71	4.73	4.56	4.42	5.24	4.79
03160204	Mobile-Tensaw	11.25	10.23	10.04	11.45	11.82	11.88	11.62	11.22	11.60	12.32	9.68	9.92	11.09
03160205	Mobile Bay	13.62	12.09	12.58	15.16	15.08	15.07	15.76	15.83	16.40	15.83	12.78	11.78	14.33
03170002	Upper Chickasawhay	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	6.56	5.34	5.54	6.15	6.02	6.37	6.16	6.38	6.16	6.09	5.44	5.58	5.98
03170009	Mississippi Coastal	1.54	1.41	1.42	1.64	1.63	1.68	1.74	1.78	1.71	1.67	1.63	1.38	1.60
06020001	Middle Tennessee-Chickamauga	0.37	0.37	0.38	0.38	0.39	0.41	0.44	0.42	0.42	0.08	0.08	0.08	0.32
06030001	Guntersville Lake	6.41	6.27	7.74	6.03	7.00	5.88	5.85	8.44	6.13	7.75	5.35	7.29	6.68
06030002	Wheeler Lake	30.54	30.64	31.01	33.71	35.24	36.57	41.27	39.55	35.02	33.32	30.30	31.37	34.04
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
06030005	Pickwick Lake	2.46	2.38	2.39	3.30	2.51	2.44	2.48	2.45	2.51	2.45	2.40	2.42	2.52
06030006	Bear	1.68	1.59	1.57	1.57	1.62	1.71	1.73	2.08	1.63	1.58	1.54	1.59	1.66

Table 10. Public-supply surface-water withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	12.21	10.60	10.36	11.96	12.52	12.84	13.87	14.64	15.60	11.80	11.03	11.12	12.38
03130003	Middle Chattahoochee-W.F. George Res.	6.65	6.14	6.16	6.97	6.16	8.16	9.39	8.78	8.67	7.51	6.78	6.43	7.32
03130004	Lower Chattahoochee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140202	Pea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140302	Patsaliga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140303	Sepulga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140304	Lower Conecuh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140305	Escambia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150105	Upper Coosa	2.06	1.89	1.82	2.06	2.02	2.23	2.32	2.13	1.95	1.70	1.62	1.70	1.96
03150106	Middle Coosa	29.50	27.08	25.49	27.54	28.27	32.37	35.56	35.92	37.33	33.81	29.20	28.51	30.88
03150107	Lower Coosa	9.95	8.14	8.21	8.86	9.22	10.00	11.72	11.10	11.34	9.87	8.53	8.97	9.66
03150108	Upper Tallapoosa	1.08	0.93	0.90	0.93	1.04	1.08	1.05	1.14	1.09	1.05	1.01	1.01	1.03
03150109	Middle Tallapoosa	17.09	15.29	13.72	15.54	15.54	18.38	20.52	20.01	20.34	16.82	14.23	17.57	17.09
03150110	Lower Tallapoosa	31.00	30.70	30.36	31.09	30.47	30.37	31.96	34.66	34.78	30.19	27.46	25.49	30.71
03150201	Upper Alabama	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150202	Cahaba	55.04	49.33	47.81	53.94	53.84	51.32	55.36	55.58	55.91	51.17	49.62	49.45	52.36
03150203	Middle Alabama	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150204	Lower Alabama	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	2.25	1.97	1.85	1.75	1.78	2.01	2.07	2.02	1.98	1.96	1.87	2.09	1.97
03160105	Luxapallila	1.97	1.82	1.77	1.86	1.83	1.98	1.95	2.06	2.04	1.91	1.74	1.83	1.90
03160106	Middle Tombigbee-Lubbub	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160107	Sipsey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	61.90	53.37	45.42	52.20	55.00	58.74	59.27	50.75	42.36	40.51	41.83	26.06	48.95
03160110	Sipsey Fork	6.89	6.97	11.59	6.71	6.73	11.56	19.16	27.46	35.07	35.04	24.76	38.79	19.23
03160111	Locust Fork	57.34	59.73	61.68	63.08	62.57	64.85	67.35	65.72	65.67	63.49	61.31	61.65	62.87
03160112	Upper Black Warrior	30.24	26.68	26.56	31.24	31.61	33.16	36.85	38.42	38.38	34.70	29.88	27.92	32.14
03160113	Lower Black Warrior	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160201	Middle Tombigbee-Chickasaw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160202	Sucarnoochee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160203	Lower Tombigbee	3.42	2.81	2.46	2.50	2.62	2.95	2.81	2.67	2.76	2.60	2.32	2.79	2.72
03160204	Mobile-Tensaw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160205	Mobile Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	73.24	66.94	66.45	70.17	69.53	74.59	72.00	72.87	73.20	69.67	67.32	66.80	70.23
03170009	Mississippi Coastal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	32.17	30.61	29.67	30.59	31.21	34.16	37.52	37.22	36.29	33.66	30.91	31.62	32.97
06030002	Wheeler Lake	70.97	67.00	61.60	70.95	77.49	84.23	100.04	98.92	93.05	84.67	68.65	64.90	78.54
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	7.94	7.59	7.61	7.74	7.91	8.25	9.44	9.68	8.69	7.93	7.60	6.98	8.11
06030005	Pickwick Lake	21.03	19.96	19.14	19.78	19.85	22.20	23.99	24.61	24.05	21.47	19.42	20.52	21.34
06030006	Bear	8.06	7.24	6.71	6.89	7.14	7.57	7.85	8.25	8.21	7.37	7.48	7.65	7.54

Table 11. Public-supply and residential total withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	12.89	11.27	11.04	12.64	13.20	13.52	14.55	15.32	16.28	12.48	11.71	11.79	13.06
03130003	Middle Chattahoochee-W.F. George Res.	11.10	9.94	9.90	11.44	10.84	12.80	14.08	13.31	13.51	11.84	10.50	10.11	11.61
03130004	Lower Chattahoochee	9.26	9.61	9.13	10.76	11.34	11.05	10.48	11.28	11.64	10.78	11.30	10.66	10.61
03130012	Chipola	3.80	2.78	2.73	3.21	3.17	3.44	3.61	3.31	3.57	3.49	2.73	2.75	3.22
03140103	Yellow	2.01	1.60	1.54	1.79	2.00	2.12	2.23	1.95	1.85	1.88	1.51	1.69	1.85
03140104	Blackwater	0.24	0.17	0.16	0.17	0.17	0.17	0.19	0.18	0.19	0.17	0.17	0.16	0.18
03140106	Perdido	4.63	4.40	4.60	5.16	4.76	4.72	4.50	4.68	4.36	4.20	3.78	4.70	4.54
03140107	Perdido Bay	6.09	5.65	5.72	6.93	7.11	6.98	7.73	6.68	7.11	6.37	5.18	4.00	6.29
03140201	Upper Choctawhatchee	18.26	18.35	22.29	21.29	24.57	25.45	24.75	25.69	27.35	22.99	19.64	19.24	22.49
03140202	Pea	7.36	7.05	6.99	7.68	8.08	7.92	8.20	8.52	8.73	7.82	7.10	7.07	7.71
03140203	Lower Choctawhatchee	0.73	0.64	0.67	0.72	0.80	0.89	0.85	0.81	0.84	0.70	0.70	0.70	0.75
03140301	Upper Conecuh	8.76	7.06	6.99	7.43	7.78	8.24	8.23	8.10	8.45	8.62	6.80	6.87	7.78
03140302	Patsaliga	1.70	1.55	1.41	1.65	1.77	1.90	1.88	1.62	1.66	1.42	1.37	1.37	1.61
03140303	Sepulga	3.73	3.31	3.26	3.26	3.37	3.59	3.63	3.39	3.18	3.17	3.15	3.23	3.36
03140304	Lower Conecuh	4.67	3.72	3.73	4.10	4.20	4.64	5.44	4.39	4.48	4.60	3.74	3.99	4.31
03140305	Escambia	2.66	2.31	2.31	2.35	3.27	2.67	2.66	2.39	2.42	2.40	2.25	2.08	2.48
03150105	Upper Coosa	5.60	5.10	4.93	5.38	5.59	6.02	6.25	5.79	5.49	4.93	4.71	4.89	5.39
03150106	Middle Coosa	72.44	66.77	63.71	66.87	68.35	74.62	79.93	80.48	81.28	74.61	67.41	67.95	72.03
03150107	Lower Coosa	19.15	15.07	15.15	15.72	16.57	17.76	19.64	20.25	20.38	18.56	16.98	15.93	17.60
03150108	Upper Tallapoosa	2.49	2.35	2.31	2.35	2.46	2.50	2.47	2.55	2.51	2.46	2.42	2.42	2.44
03150109	Middle Tallapoosa	18.40	16.61	15.04	16.86	16.85	19.69	21.83	21.33	21.65	18.13	15.54	18.88	18.40
03150110	Lower Tallapoosa	34.88	33.69	34.12	34.43	33.67	33.72	36.29	38.88	38.94	33.90	30.96	28.96	34.37
03150201	Upper Alabama	31.28	25.54	24.16	30.45	35.59	38.05	36.80	37.48	36.67	35.19	29.89	29.50	32.55
03150202	Cahaba	82.79	74.40	73.84	81.19	82.27	80.94	86.44	86.90	86.96	80.78	75.82	75.27	80.63
03150203	Middle Alabama	5.07	4.70	3.18	3.48	3.25	3.47	3.42	3.68	5.17	3.54	3.38	3.46	3.81
03150204	Lower Alabama	2.81	2.44	2.41	2.66	2.58	2.87	2.68	2.73	2.58	2.54	2.29	2.35	2.58
03160101	Upper Tombigbee	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
03160103	Buttahatchee	3.51	3.05	2.95	2.85	2.92	3.29	3.29	3.21	3.11	3.08	3.00	3.27	3.13
03160105	Luxapallila	4.11	3.76	3.64	3.73	3.77	3.93	4.05	4.29	4.00	3.81	3.58	3.77	3.87
03160106	Middle Tombigbee-Lubbub	5.43	4.42	4.90	4.94	5.08	5.23	5.61	5.26	5.32	5.38	4.87	5.05	5.12
03160107	Sipsey	1.31	1.25	1.20	1.16	1.22	1.23	1.24	1.24	1.18	1.21	1.20	1.23	1.22
03160108	Noxubee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160109	Mulberry Fork	63.57	54.97	47.08	53.78	56.58	60.38	60.92	52.45	43.97	42.01	43.16	27.74	50.55
03160110	Sipsey Fork	7.61	7.69	12.31	7.43	7.45	12.28	19.88	28.18	35.79	35.76	25.48	39.51	19.95
03160111	Locust Fork	60.90	63.24	65.19	66.49	65.95	68.45	70.99	69.21	69.79	67.41	65.19	65.70	66.54
03160112	Upper Black Warrior	31.62	28.08	27.97	32.58	33.01	34.44	38.14	39.88	39.91	36.01	31.10	29.10	33.49
03160113	Lower Black Warrior	5.57	4.31	4.43	4.26	4.42	4.61	4.60	5.13	5.53	4.99	4.62	5.00	4.79
03160201	Middle Tombigbee-Chickasaw	5.54	5.03	5.20	4.81	4.94	5.01	4.89	4.96	4.28	4.31	4.11	4.67	4.81
03160202	Sucamoochee	0.10	0.11	0.13	0.10	0.09	0.09	0.10	0.10	0.10	0.09	0.09	0.09	0.10
03160203	Lower Tombigbee	8.59	7.26	6.75	6.96	7.39	7.78	7.64	8.38	7.49	7.16	6.74	8.03	7.51
03160204	Mobile-Tensaw	11.25	10.23	10.04	11.45	11.82	11.88	11.62	11.22	11.60	12.32	9.68	9.92	11.09
03160205	Mobile Bay	13.62	12.09	12.58	15.16	15.08	15.07	15.76	15.83	16.40	15.83	12.78	11.78	14.33
03170002	Upper Chickasawhay	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	79.80	72.28	71.99	76.32	75.55	80.96	78.16	79.25	79.36	75.76	72.76	72.38	76.21
03170009	Mississippi Coastal	1.54	1.41	1.42	1.64	1.63	1.68	1.74	1.78	1.71	1.67	1.63	1.38	1.60
06020001	Middle Tennessee-Chickamauga	0.37	0.37	0.38	0.38	0.39	0.41	0.44	0.42	0.42	0.08	0.08	0.08	0.32
06030001	Guntersville Lake	38.58	36.89	37.41	36.62	38.21	40.03	43.37	45.66	42.42	41.41	36.26	38.91	39.65
06030002	Wheeler Lake	101.51	97.65	92.61	104.66	112.73	120.80	141.31	138.47	128.07	117.99	98.95	96.27	112.59
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	8.26	7.91	7.92	8.06	8.22	8.56	9.76	10.00	9.00	8.24	7.92	7.29	8.43
06030005	Pickwick Lake	23.49	22.34	21.53	23.08	22.36	24.64	26.47	27.06	26.55	23.92	21.83	22.94	23.85
06030006	Bear	9.75	8.83	8.29	8.46	8.76	9.28	9.57	10.33	9.84	8.95	9.02	9.23	9.19

Public-Supply Withdrawals – 2040

Total statewide public-supply withdrawals for 2040 are estimated to be 968 MGD. Estimates of withdrawal by source indicate that total public-supply surface-water withdrawals for 2040 are approximately 66 percent (641 MGD) of the total public-supply withdrawals for 2040, with the remaining 34 percent from groundwater (327 MGD) (figure 21).

Total public-supply withdrawals for 2040 are listed in tables 12, 13, and 14. For 2040, the public-supply sector accounts for 9 percent of the total water withdrawals (968 MGD). The subbasins with the highest public-supply withdrawal totals for 2040 are the Wheeler Lake (06030002; 148 MGD), the Cahaba (03150202; 99 MGD), the Escatawpa (03170008; 89 MGD), the Middle Coosa (03150106; 78 MGD) and the Locust Fork (03160111; 68 MGD) subbasins (figure 22).

Surface-water withdrawals for the public-supply sector for 2040 account for 66 percent of the total public-supply withdrawals. Fifty percent (50%) of the surface-water withdrawals for public supply for 2040 occur in the Wheeler Lake (06030002; 106 MGD), the Escatawpa (03170008; 83 MGD), the Locust Fork (03160111; 65 MGD), and the Cahaba (03150202; 65 MGD) subbasins, with the Wheeler Lake subbasin accounting for 17 percent of the total surface-water withdrawals for public supply.

Groundwater withdrawals for the public supply sector account for 34 percent of the total public-supply withdrawals. Forty-eight percent (48%) of the groundwater withdrawals for public supply for 2040 occur in the Middle Coosa (03150106; 44 MGD), the Wheeler Lake (06030002; 43 MGD), the Upper Alabama (03150201; 35 MGD), and the Cahaba (03150202; 34 MGD) subbasins, with the Middle Coosa subbasin accounting for 13 percent of the total groundwater withdrawals for public supply.

Figure 21. Public-supply withdrawals by source, 2040, in MGD.

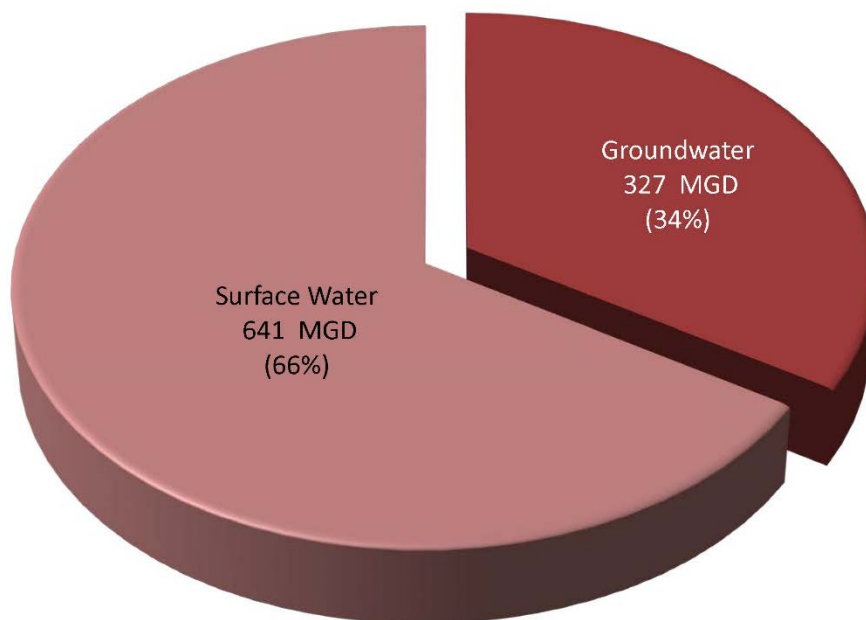


Figure 22. Map of public-supply withdrawals, 2040, in MGD.

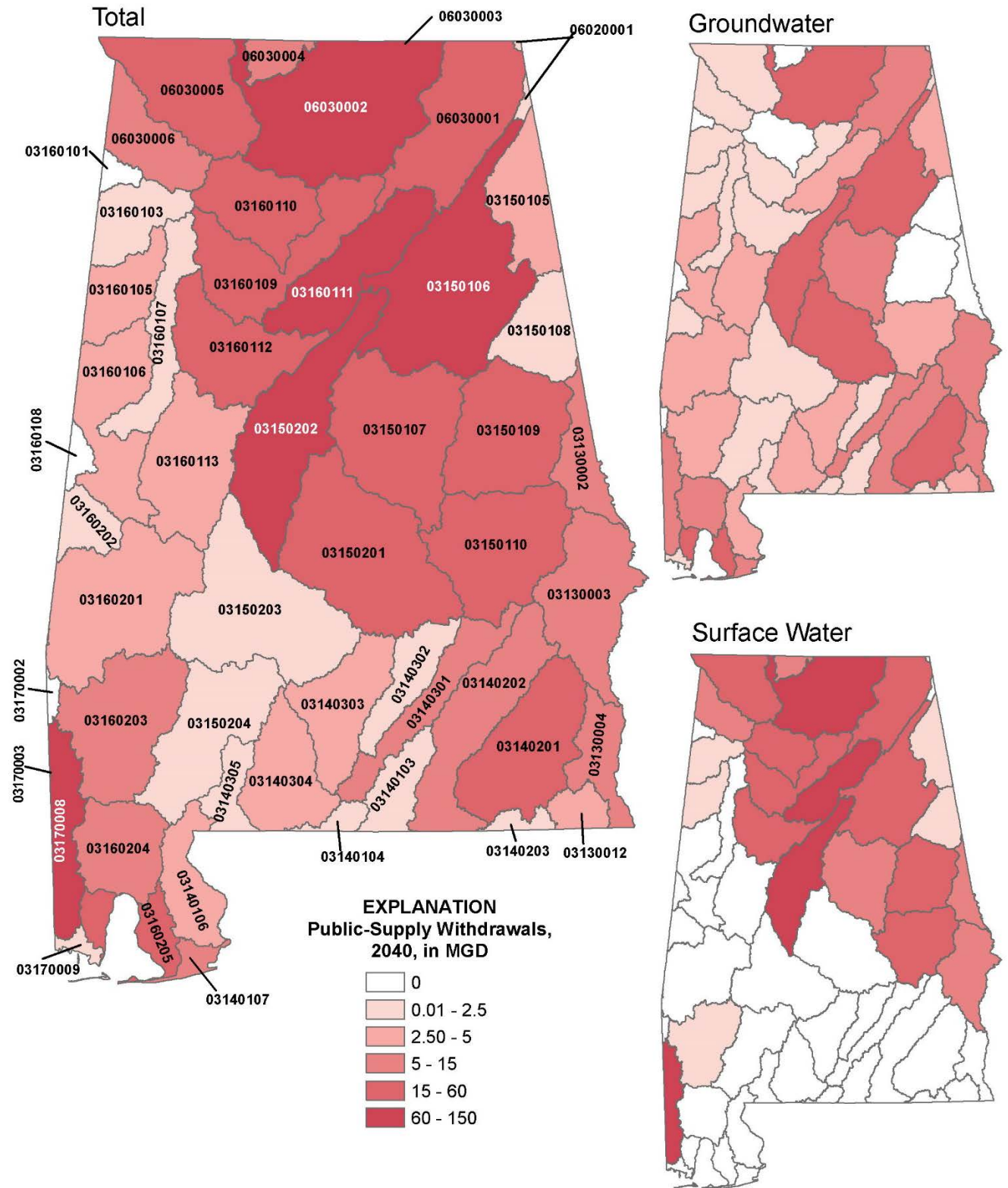


Table 12. Public-supply groundwater withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03130003	Middle Chattahoochee-W.F. George Res.	5.28	4.41	4.33	5.30	5.60	5.53	5.61	5.39	5.81	5.12	4.30	4.25	5.08
03130004	Lower Chattahoochee	10.29	10.70	10.13	12.09	12.79	12.45	11.76	12.71	13.16	12.11	12.75	11.97	11.91
03130012	Chipola	4.21	2.87	2.80	3.42	3.37	3.74	3.95	3.57	3.90	3.79	2.79	2.83	3.44
03140103	Yellow	1.63	1.21	1.15	1.41	1.63	1.75	1.86	1.58	1.47	1.51	1.12	1.31	1.47
03140104	Blackwater	0.13	0.06	0.05	0.06	0.07	0.07	0.09	0.08	0.08	0.06	0.06	0.05	0.07
03140106	Perdido	4.96	4.68	4.92	5.61	5.11	5.06	4.79	5.01	4.62	4.42	3.91	5.03	4.84
03140107	Perdido Bay	10.11	9.36	9.47	11.52	11.84	11.61	12.88	11.11	11.83	10.58	8.56	6.56	10.45
03140201	Upper Choctawhatchee	20.18	20.29	25.07	23.85	27.82	28.89	28.05	29.18	31.19	25.91	21.85	21.37	25.30
03140202	Pea	7.16	6.81	6.73	7.52	7.97	7.80	8.11	8.48	8.71	7.68	6.86	6.82	7.55
03140203	Lower Choctawhatchee	0.60	0.51	0.54	0.60	0.68	0.78	0.73	0.69	0.73	0.58	0.57	0.58	0.63
03140301	Upper Conecuh	9.04	7.20	7.12	7.60	7.98	8.48	8.47	8.33	8.71	8.89	6.92	6.99	7.98
03140302	Patsaliga	1.52	1.36	1.21	1.47	1.59	1.73	1.71	1.44	1.48	1.23	1.18	1.18	1.43
03140303	Sepulga	3.08	2.69	2.65	2.65	2.75	2.96	3.00	2.77	2.58	2.56	2.55	2.62	2.74
03140304	Lower Conecuh	3.82	2.95	2.96	3.30	3.39	3.80	4.54	3.57	3.65	3.76	2.96	3.20	3.49
03140305	Escambia	2.29	1.96	1.96	2.00	2.86	2.30	2.29	2.04	2.07	2.05	1.90	1.75	2.12
03150105	Upper Coosa	2.92	2.56	2.44	2.68	2.95	3.19	3.35	3.06	2.92	2.57	2.42	2.53	2.80
03150106	Middle Coosa	45.51	41.84	40.19	41.44	42.30	44.73	47.13	47.34	46.66	43.11	40.18	41.56	43.50
03150107	Lower Coosa	9.87	6.90	6.91	6.82	7.45	7.99	8.19	9.80	9.66	9.20	8.89	6.94	8.22
03150108	Upper Tallapoosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150109	Middle Tallapoosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150110	Lower Tallapoosa	3.86	2.72	3.71	3.17	2.99	3.18	4.44	4.30	4.24	3.64	3.37	3.34	3.58
03150201	Upper Alabama	33.76	27.32	25.77	32.83	38.59	41.36	39.95	40.72	39.81	38.14	32.19	31.76	35.18
03150202	Cahaba	33.36	30.06	31.24	32.75	34.21	35.68	37.50	37.79	37.46	35.67	31.45	30.98	34.01
03150203	Middle Alabama	3.44	3.14	1.88	2.13	1.94	2.12	2.08	2.30	3.52	2.18	2.05	2.11	2.41
03150204	Lower Alabama	2.23	1.92	1.89	2.10	2.04	2.28	2.12	2.16	2.03	2.00	1.79	1.84	2.03
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	0.61	0.45	0.47	0.47	0.51	0.63	0.58	0.55	0.50	0.48	0.50	0.54	0.52
03160105	Luxapallila	1.51	1.34	1.29	1.28	1.35	1.35	1.48	1.60	1.37	1.31	1.25	1.35	1.37
03160106	Middle Tombigbee-Lubbub	4.63	3.67	4.13	4.16	4.29	4.44	4.80	4.47	4.52	4.59	4.10	4.27	4.34
03160107	Sipsey	0.75	0.69	0.64	0.60	0.66	0.67	0.68	0.68	0.62	0.65	0.64	0.67	0.66
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	0.89	0.81	0.89	0.80	0.80	0.85	0.87	0.92	0.83	0.70	0.52	0.90	0.82
03160110	Sipsey Fork	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160111	Locust Fork	2.65	2.59	2.60	2.49	2.47	2.70	2.73	2.58	3.23	3.02	2.98	3.16	2.77
03160112	Upper Black Warrior	0.71	0.73	0.74	0.66	0.72	0.60	0.60	0.79	0.87	0.63	0.54	0.49	0.67
03160113	Lower Black Warrior	5.77	4.29	4.44	4.25	4.43	4.65	4.64	5.26	5.72	5.09	4.66	5.10	4.86
03160201	Middle Tombigbee-Chickasaw	3.65	3.24	3.38	3.05	3.16	3.22	3.12	3.18	2.63	2.65	2.48	2.94	3.06
03160202	Sucarnoochee	0.05	0.06	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.05	0.05
03160203	Lower Tombigbee	3.87	3.25	3.12	3.26	3.52	3.58	3.58	4.33	3.49	3.35	3.22	3.93	3.54
03160204	Mobile-Tensaw	10.05	9.02	8.84	10.26	10.63	10.69	10.43	10.02	10.40	11.13	8.46	8.71	9.89
03160205	Mobile Bay	14.60	12.83	13.39	16.39	16.29	16.28	17.09	17.16	17.82	17.16	13.62	12.46	15.42
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	6.74	5.29	5.54	6.25	6.10	6.52	6.27	6.53	6.27	6.18	5.41	5.57	6.05
03170009	Mississippi Coastal	1.19	1.04	1.06	1.29	1.28	1.32	1.39	1.43	1.36	1.32	1.28	1.02	1.25
06020001	Middle Tennessee-Chickamauga	0.29	0.28	0.29	0.29	0.30	0.33	0.35	0.34	0.33	0.00	0.00	0.00	0.23
06030001	Guntersville Lake	5.60	5.44	7.16	5.15	6.29	4.97	4.94	7.98	5.27	7.17	4.36	6.63	5.92
06030002	Wheeler Lake	38.15	38.29	38.78	42.41	44.47	46.25	52.57	50.26	44.17	41.89	37.83	39.26	42.86
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030005	Pickwick Lake	1.10	1.02	1.03	1.95	1.14	1.08	1.11	1.09	1.14	1.09	1.04	1.06	1.15
06030006	Bear	1.13	1.03	1.02	1.02	1.06	1.16	1.18	1.54	1.08	1.02	0.99	1.04	1.11

Table 13. Public-supply surface-water withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	14.36	12.46	12.18	14.06	14.72	15.10	16.30	17.21	18.34	13.87	12.97	13.07	14.55
03130003	Middle Chattahoochee-W.F. George Res.	8.99	8.29	8.33	9.42	8.33	11.03	12.69	11.86	11.72	10.15	9.16	8.68	9.89
03130004	Lower Chattahoochee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140202	Pea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140302	Patsaliga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140303	Sepulga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140304	Lower Conecuh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140305	Escambia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150105	Upper Coosa	2.27	2.09	2.01	2.27	2.24	2.47	2.57	2.35	2.16	1.88	1.80	1.88	2.17
03150106	Middle Coosa	33.30	30.57	28.77	31.09	31.91	36.54	40.14	40.55	42.13	38.16	32.96	32.18	34.86
03150107	Lower Coosa	12.97	10.61	10.71	11.55	12.03	13.04	15.29	14.47	14.78	12.87	11.13	11.70	12.59
03150108	Upper Tallapoosa	1.12	0.97	0.93	0.97	1.08	1.12	1.10	1.18	1.14	1.09	1.05	1.05	1.07
03150109	Middle Tallapoosa	16.88	15.10	13.55	15.35	15.34	18.15	20.26	19.76	20.08	16.61	14.05	17.35	16.87
03150110	Lower Tallapoosa	40.11	39.72	39.28	40.22	39.42	39.30	41.35	44.85	44.99	39.06	35.53	32.98	39.73
03150201	Upper Alabama	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150202	Cahaba	68.17	61.09	59.21	66.81	66.69	63.56	68.56	68.84	69.24	63.38	61.46	61.24	64.85
03150203	Middle Alabama	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150204	Lower Alabama	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	2.00	1.75	1.64	1.56	1.58	1.78	1.83	1.79	1.75	1.74	1.66	1.85	1.74
03160105	Luxapallila	1.71	1.58	1.53	1.61	1.58	1.71	1.69	1.78	1.77	1.66	1.51	1.58	1.64
03160106	Middle Tombigbee-Lubbub	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160107	Sipsey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	65.63	56.59	48.15	55.35	58.31	62.28	62.84	53.81	44.91	42.96	44.35	27.63	51.90
03160110	Sipsey Fork	6.94	7.02	11.67	6.76	6.78	11.64	19.29	27.65	35.31	35.28	24.93	39.05	19.36
03160111	Locust Fork	59.45	61.93	63.95	65.40	64.87	67.23	69.83	68.14	68.09	65.82	63.56	63.92	65.18
03160112	Upper Black Warrior	33.05	29.15	29.02	34.14	34.55	36.23	40.27	41.99	41.94	37.92	32.65	30.51	35.12
03160113	Lower Black Warrior	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160201	Middle Tombigbee-Chickasaw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160202	Sucarnoochee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160203	Lower Tombigbee	2.95	2.43	2.12	2.16	2.26	2.54	2.42	2.31	2.39	2.24	2.01	2.41	2.35
03160204	Mobile-Tensaw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160205	Mobile Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	86.76	79.30	78.72	83.12	82.36	88.36	85.29	86.32	86.71	82.53	79.75	79.13	83.20
03170009	Mississippi Coastal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	37.77	35.94	34.83	35.91	36.64	40.10	44.04	43.70	42.60	39.51	36.29	37.12	38.70
06030002	Wheeler Lake	95.39	90.05	82.80	95.36	104.15	113.21	134.46	132.95	125.07	113.80	92.26	87.23	105.56
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	10.47	10.01	10.04	10.21	10.43	10.88	12.46	12.77	11.46	10.46	10.03	9.21	10.70
06030005	Pickwick Lake	21.38	20.30	19.46	20.11	20.18	22.58	24.40	25.02	24.45	21.83	19.75	20.86	21.69
06030006	Bear	8.24	7.40	6.86	7.04	7.30	7.74	8.02	8.43	8.39	7.54	7.65	7.81	7.70

Table 14. Public-supply total withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	14.36	12.46	12.18	14.06	14.72	15.10	16.30	17.21	18.34	13.87	12.97	13.07	14.55
03130003	Middle Chattahoochee-W.F. George Res.	14.26	12.70	12.65	14.72	13.92	16.56	18.30	17.25	17.53	15.27	13.46	12.93	14.96
03130004	Lower Chattahoochee	10.29	10.70	10.13	12.09	12.79	12.45	11.76	12.71	13.16	12.11	12.75	11.97	11.91
03130012	Chipola	4.21	2.87	2.80	3.42	3.37	3.74	3.95	3.57	3.90	3.79	2.79	2.83	3.44
03140103	Yellow	1.63	1.21	1.15	1.41	1.63	1.75	1.86	1.58	1.47	1.51	1.12	1.31	1.47
03140104	Blackwater	0.13	0.06	0.05	0.06	0.07	0.07	0.09	0.08	0.08	0.06	0.06	0.05	0.07
03140106	Perdido	4.96	4.68	4.92	5.61	5.11	5.06	4.79	5.01	4.62	4.42	3.91	5.03	4.84
03140107	Perdido Bay	10.11	9.36	9.47	11.52	11.84	11.61	12.88	11.11	11.83	10.58	8.56	6.56	10.45
03140201	Upper Choctawhatchee	20.18	20.29	25.07	23.85	27.82	28.89	28.05	29.18	31.19	25.91	21.85	21.37	25.30
03140202	Pea	7.16	6.81	6.73	7.52	7.97	7.80	8.11	8.48	8.71	7.68	6.86	6.82	7.55
03140203	Lower Choctawhatchee	0.60	0.51	0.54	0.60	0.68	0.78	0.73	0.69	0.73	0.58	0.57	0.58	0.63
03140301	Upper Conecuh	9.04	7.20	7.12	7.60	7.98	8.48	8.47	8.33	8.71	8.89	6.92	6.99	7.98
03140302	Patsaliga	1.52	1.36	1.21	1.47	1.59	1.73	1.71	1.44	1.48	1.23	1.18	1.18	1.43
03140303	Sepulga	3.08	2.69	2.65	2.65	2.75	2.96	3.00	2.77	2.58	2.56	2.55	2.62	2.74
03140304	Lower Conecuh	3.82	2.95	2.96	3.30	3.39	3.80	4.54	3.57	3.65	3.76	2.96	3.20	3.49
03140305	Escambia	2.29	1.96	1.96	2.00	2.86	2.30	2.29	2.04	2.07	2.05	1.90	1.75	2.12
03150105	Upper Coosa	5.20	4.65	4.45	4.95	5.19	5.66	5.92	5.41	5.08	4.45	4.22	4.41	4.96
03150106	Middle Coosa	78.81	72.41	68.96	72.53	74.20	81.27	87.27	87.89	88.79	81.27	73.14	73.74	78.36
03150107	Lower Coosa	22.84	17.51	17.62	18.37	19.47	21.03	23.48	24.27	24.44	22.07	20.01	18.64	20.81
03150108	Upper Tallapoosa	1.12	0.97	0.93	0.97	1.08	1.12	1.10	1.18	1.14	1.09	1.05	1.05	1.07
03150109	Middle Tallapoosa	16.88	15.10	13.55	15.35	15.34	18.15	20.26	19.76	20.08	16.61	14.05	17.35	16.87
03150110	Lower Tallapoosa	43.97	42.43	42.99	43.39	42.41	42.47	45.79	49.14	49.23	42.70	38.90	36.31	43.31
03150201	Upper Alabama	33.76	27.32	25.77	32.83	38.59	41.36	39.95	40.72	39.81	38.14	32.19	31.76	35.18
03150202	Cahaba	101.53	91.15	90.45	99.56	100.89	99.24	106.06	106.63	106.70	99.05	92.91	92.22	98.87
03150203	Middle Alabama	3.44	3.14	1.88	2.13	1.94	2.12	2.08	2.30	3.52	2.18	2.05	2.11	2.41
03150204	Lower Alabama	2.23	1.92	1.89	2.10	2.04	2.28	2.12	2.16	2.03	2.00	1.79	1.84	2.03
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	2.61	2.20	2.11	2.02	2.09	2.41	2.41	2.35	2.26	2.22	2.16	2.39	2.27
03160105	Luxapallila	3.22	2.92	2.82	2.89	2.93	3.06	3.17	3.38	3.13	2.97	2.76	2.93	3.02
03160106	Middle Tombigbee-Lubbub	4.63	3.67	4.13	4.16	4.29	4.44	4.80	4.47	4.52	4.59	4.10	4.27	4.34
03160107	Sipsey	0.75	0.69	0.64	0.60	0.66	0.67	0.68	0.68	0.62	0.65	0.64	0.67	0.66
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	66.52	57.40	49.04	56.14	59.11	63.13	63.71	54.73	45.74	43.66	44.88	28.53	52.72
03160110	Sipsey Fork	6.94	7.02	11.67	6.76	6.78	11.64	19.29	27.65	35.31	35.28	24.93	39.05	19.36
03160111	Locust Fork	62.09	64.52	66.55	67.89	67.34	69.93	72.56	70.72	71.32	68.84	66.54	67.08	67.95
03160112	Upper Black Warrior	33.76	29.88	29.76	34.80	35.27	36.83	40.87	42.78	42.81	38.55	33.19	31.00	35.79
03160113	Lower Black Warrior	5.77	4.29	4.44	4.25	4.43	4.65	4.64	5.26	5.72	5.09	4.66	5.10	4.86
03160201	Middle Tombigbee-Chickasaw	3.65	3.24	3.38	3.05	3.16	3.22	3.12	3.18	2.63	2.65	2.48	2.94	3.06
03160202	Sucamoochee	0.05	0.06	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.05	0.05
03160203	Lower Tombigbee	6.82	5.68	5.24	5.42	5.78	6.13	6.01	6.64	5.88	5.59	5.23	6.34	5.90
03160204	Mobile-Tensaw	10.05	9.02	8.84	10.26	10.63	10.69	10.43	10.02	10.40	11.13	8.46	8.71	9.89
03160205	Mobile Bay	14.60	12.83	13.39	16.39	16.29	16.28	17.09	17.16	17.82	17.16	13.62	12.46	15.42
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	93.49	84.59	84.25	89.37	88.47	94.87	91.56	92.85	92.98	88.71	85.16	84.70	89.25
03170009	Mississippi Coastal	1.19	1.04	1.06	1.29	1.28	1.32	1.39	1.43	1.36	1.32	1.28	1.02	1.25
06020001	Middle Tennessee-Chickamauga	0.29	0.28	0.29	0.29	0.30	0.33	0.35	0.34	0.33	0.00	0.00	0.00	0.23
06030001	Guntersville Lake	43.36	41.37	41.99	41.07	42.94	45.07	48.98	51.68	47.88	46.69	40.65	43.75	44.62
06030002	Wheeler Lake	133.54	128.34	121.58	137.77	148.62	159.46	187.03	183.21	169.23	155.69	130.09	126.49	148.42
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	10.47	10.01	10.04	10.21	10.43	10.88	12.46	12.77	11.46	10.46	10.03	9.21	10.70
06030005	Pickwick Lake	22.47	21.31	20.49	22.06	21.33	23.65	25.51	26.11	25.59	22.92	20.79	21.92	22.85
06030006	Bear	9.37	8.44	7.88	8.06	8.37	8.90	9.20	9.97	9.47	8.56	8.63	8.85	8.81

Public-Supply Withdrawals Comparing 2010 to 2040

The comparison of groundwater, surface-water, and total public-supply withdrawals from 2010 to 2040 is shown in figure 23. Total public-supply withdrawals increase from 870 MGD in 2010 to 968 MGD in 2040, an increase of 98 MGD (10%). The Wheeler Lake (06030002; 36 MGD), the Cahaba (03150202; 18 MGD), and the Escatawpa (03170008; 13 MGD) subbasins have the largest increases in public-supply withdrawals from 2010 to 2040. The Middle Tombigbee-Chickasaw (03160201; -1.76 MGD), the Lower Tombigbee (03160203; -1.62 MGD), the Middle Tallapoosa (03150109; -1.53 MGD), the Middle Alabama (03150203; -1.41 MGD), the Upper Tallapoosa (03150108; -1.38 MGD), the Mobile-Tensaw (03160204; -1.20 MGD), and the Pickwick Lake (06030005; -1.01 MGD) subbasins have the largest decreases in withdrawals from 2010 to 2040 (table 15 and figure 24).

Surface-water withdrawals are estimated to increase 89 MGD, from 552 MGD in 2010 to 641 MGD (16%) in 2040. The Wheeler Lake (06030002; 27 MGD), the Escatawpa (03170008; 13 MGD), and the Cahaba (03150202; 12 MGD) subbasins have the largest increases in surface-water public-supply withdrawals. The Lower Tombigbee (03160203; -0.37 MGD) and the Luxapallila (03160105; -0.26 MGD) subbasins have the largest decreases in surface-water withdrawals from 2010 to 2040.

Groundwater withdrawals are estimated to increase 9 MGD, from 318 MGD in 2010 to 327 MGD in 2040 (3%). The Wheeler Lake (06030002; 9 MGD), the Cahaba (03150202; 6 MGD), and the Perdido Bay (03140107; 4 MGD) subbasins have the largest increases in groundwater withdrawals for the public supply sector. The Middle Tombigbee-Chickasaw (03160201; -1.76 MGD), the Upper Tallapoosa (03150108; -1.42 MGD) and the Middle Alabama (03150203; -1.41 MGD) subbasins have the largest decreases in withdrawals from 2010 to 2040.

Figure 23. Comparison of public-supply withdrawals, 2010 to 2040, in MGD.

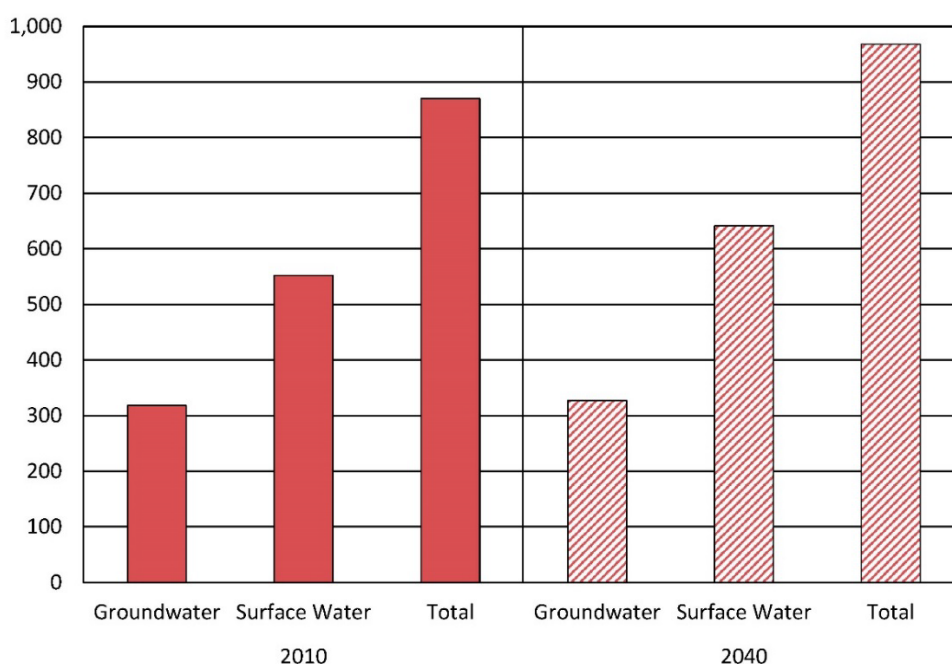


Figure 24. Map of public-supply withdrawal comparison, 2010 to 2040, in MGD.

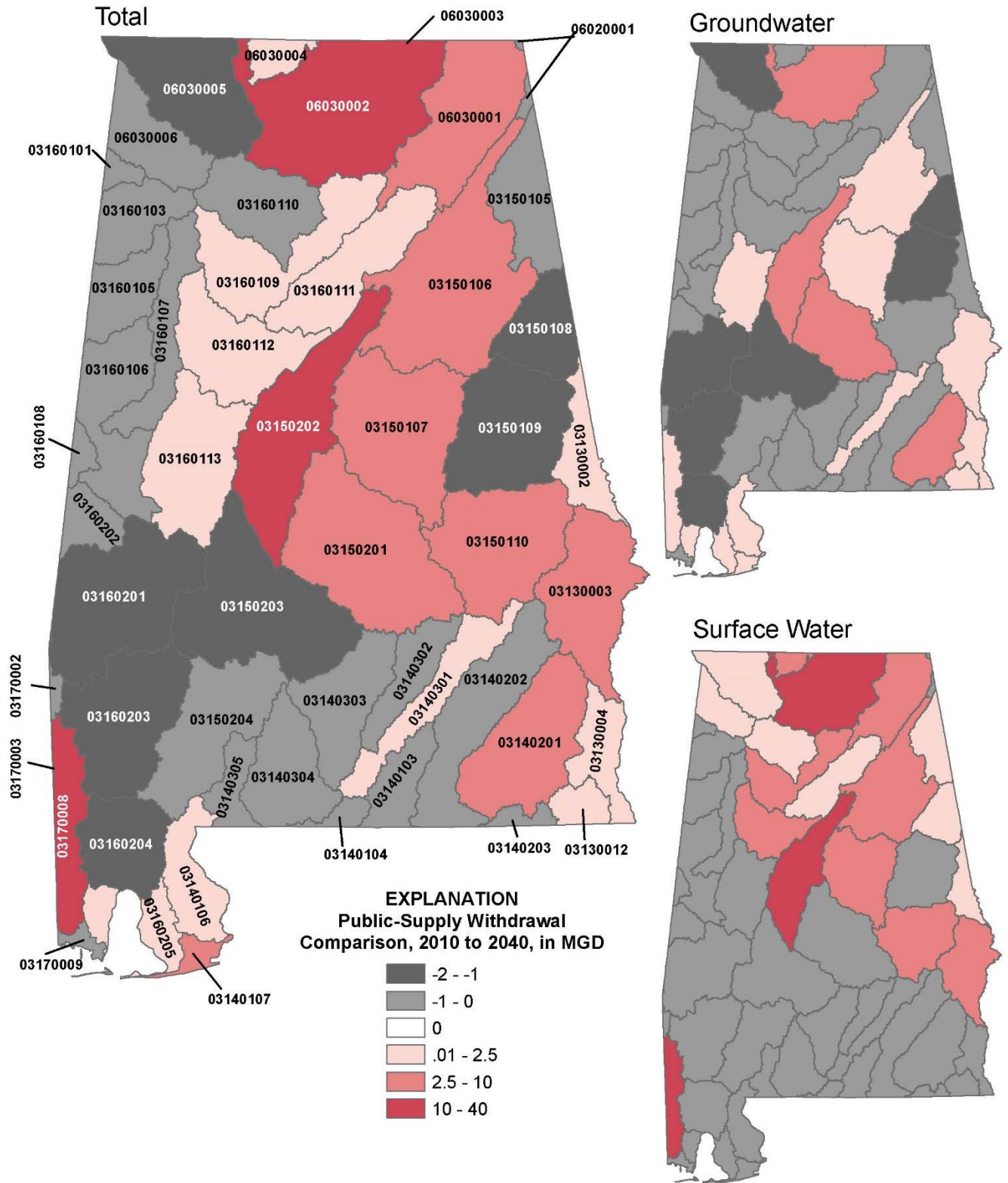


Table 15. Public-supply withdrawal comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	Groundwater				Surface Water				Total Withdrawals			
		2010 Average	2040 Average	Change in Withdrawal	Percent Change	2010 Average	2040 Average	Change in Withdrawal	Percent Change	2010 Average	2040 Average	Change in Withdrawal	Percent Change
03130002	Middle Chattahoochee-Lake Harding	0.68	0.00	-0.68	-100%	12.38	14.55	2.17	18%	13.06	14.55	1.50	11%
03130003	Middle Chattahoochee-W.F. George	4.30	5.08	0.78	18%	7.32	9.89	2.57	35%	11.61	14.96	3.35	29%
03130004	Lower Chattahoochee	10.61	11.91	1.30	12%	0.00	0.00	0.00	0%	10.61	11.91	1.30	12%
03130012	Chipola	3.22	3.44	0.22	7%	0.00	0.00	0.00	0%	3.22	3.44	0.22	7%
03140103	Yellow	1.85	1.47	-0.38	-20%	0.00	0.00	0.00	0%	1.85	1.47	-0.38	-20%
03140104	Blackwater	0.18	0.07	-0.11	-60%	0.00	0.00	0.00	0%	0.18	0.07	-0.11	-60%
03140106	Perdido	4.54	4.84	0.30	7%	0.00	0.00	0.00	0%	4.54	4.84	0.30	7%
03140107	Perdido Bay	6.29	10.45	4.16	66%	0.00	0.00	0.00	0%	6.29	10.45	4.16	66%
03140201	Upper Choctawhatchee	22.49	25.30	2.82	13%	0.00	0.00	0.00	0%	22.49	25.30	2.82	13%
03140202	Pea	7.71	7.55	-0.16	-2%	0.00	0.00	0.00	0%	7.71	7.55	-0.16	-2%
03140203	Lower Choctawhatchee	0.75	0.63	-0.12	-16%	0.00	0.00	0.00	0%	0.75	0.63	-0.12	-16%
03140301	Upper Conecuh	7.78	7.98	0.20	3%	0.00	0.00	0.00	0%	7.78	7.98	0.20	3%
03140302	Patsaliga	1.61	1.43	-0.18	-11%	0.00	0.00	0.00	0%	1.61	1.43	-0.18	-11%
03140303	Sepulga	3.36	2.74	-0.62	-18%	0.00	0.00	0.00	0%	3.36	2.74	-0.62	-18%
03140304	Lower Conecuh	4.31	3.49	-0.82	-19%	0.00	0.00	0.00	0%	4.31	3.49	-0.82	-19%
03140305	Escambia	2.48	2.12	-0.36	-15%	0.00	0.00	0.00	0%	2.48	2.12	-0.36	-15%
03150105	Upper Coosa	3.43	2.80	-0.63	-18%	1.96	2.17	0.21	11%	5.39	4.96	-0.42	-8%
03150106	Middle Coosa	41.15	43.50	2.35	6%	30.88	34.86	3.98	13%	72.03	78.36	6.32	9%
03150107	Lower Coosa	7.94	8.22	0.28	4%	9.66	12.59	2.94	30%	17.60	20.81	3.22	18%
03150108	Upper Tallapoosa	1.42	0.00	-1.42	-100%	1.03	1.07	0.04	4%	2.44	1.07	-1.38	-56%
03150109	Middle Tallapoosa	1.31	0.00	-1.31	-100%	17.09	16.87	-0.21	-1%	18.40	16.87	-1.53	-8%
03150110	Lower Tallapoosa	3.66	3.58	-0.08	-2%	30.71	39.73	9.02	29%	34.37	43.31	8.94	26%
03150201	Upper Alabama	32.55	35.18	2.63	8%	0.00	0.00	0.00	0%	32.55	35.18	2.63	8%
03150202	Cahaba	28.27	34.01	5.74	20%	52.36	64.85	12.49	24%	80.63	98.87	18.23	23%
03150203	Middle Alabama	3.81	2.41	-1.41	-37%	0.00	0.00	0.00	0%	3.81	2.41	-1.41	-37%
03150204	Lower Alabama	2.58	2.03	-0.55	-21%	0.00	0.00	0.00	0%	2.58	2.03	-0.55	-21%
03160101	Upper Tombigbee	0.12	0.00	-0.12	-100%	0.00	0.00	0.00	0%	0.12	0.00	-0.12	-100%
03160103	Buttahatchee	1.16	0.52	-0.64	-55%	1.97	1.74	-0.22	-11%	3.13	2.27	-0.86	-27%
03160105	Luxapallila	1.97	1.37	-0.60	-30%	1.90	1.64	-0.26	-13%	3.87	3.02	-0.85	-22%
03160106	Middle Tombigbee-Lubbub	5.12	4.34	-0.78	-15%	0.00	0.00	0.00	0%	5.12	4.34	-0.78	-15%
03160107	Sipsey	1.22	0.66	-0.56	-46%	0.00	0.00	0.00	0%	1.22	0.66	-0.56	-46%
03160108	Noxubee	0.02	0.00	-0.02	-100%	0.00	0.00	0.00	0%	0.02	0.00	-0.02	-100%
03160109	Mulberry Fork	1.60	0.82	-0.79	-49%	48.95	51.90	2.95	6%	50.55	52.72	2.16	4%
03160110	Sipsey Fork	0.72	0.00	-0.72	-100%	19.23	19.36	0.13	1%	19.95	19.36	-0.59	-3%
03160111	Locust Fork	3.67	2.77	-0.91	-25%	62.87	65.18	2.31	4%	66.54	67.95	1.40	2%
03160112	Upper Black Warrior	1.35	0.67	-0.68	-50%	32.14	35.12	2.98	9%	33.49	35.79	2.30	7%
03160113	Lower Black Warrior	4.79	4.86	0.07	1%	0.00	0.00	0.00	0%	4.79	4.86	0.07	1%
03160201	Middle Tombigbee-Chickasaw	4.81	3.06	-1.76	-36%	0.00	0.00	0.00	0%	4.81	3.06	-1.76	-36%
03160202	Sucarnoochee	0.10	0.05	-0.05	-47%	0.00	0.00	0.00	0%	0.10	0.05	-0.05	-47%
03160203	Lower Tombigbee	4.79	3.54	-1.25	-26%	2.72	2.35	-0.37	-14%	7.51	5.90	-1.62	-22%
03160204	Mobile-Tensaw	11.09	9.89	-1.20	-11%	0.00	0.00	0.00	0%	11.09	9.89	-1.20	-11%
03160205	Mobile Bay	14.33	15.42	1.09	8%	0.00	0.00	0.00	0%	14.33	15.42	1.09	8%
03170002	Upper Chickasawhay	0.04	0.00	-0.04	-100%	0.00	0.00	0.00	0%	0.04	0.00	-0.04	-100%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
03170008	Escatawpa	5.98	6.05	0.07	1%	70.23	83.20	12.96	18%	76.21	89.25	13.04	17%
03170009	Mississippi Coastal	1.60	1.25	-0.36	-22%	0.00	0.00	0.00	0%	1.60	1.25	-0.36	-22%
06020001	Middle Tennessee-Chickamauga	0.32	0.23	-0.09	-27%	0.00	0.00	0.00	0%	0.32	0.23	-0.09	-27%
06030001	Guntersville Lake	6.68	5.92	-0.76	-11%	32.97	38.70	5.73	17%	39.65	44.62	4.97	13%
06030002	Wheeler Lake	34.04	42.86	8.82	26%	78.54	105.56	27.02	34%	112.59	148.42	35.84	32%
06030003	Elk	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
06030004	Lower Elk	0.31	0.00	-0.31	-100%	8.11	10.70	2.59	32%	8.43	10.70	2.27	27%
06030005	Pickwick Lake	2.52	1.15	-1.36	-54%	21.34	21.69	0.36	2%	23.85	22.85	-1.01	-4%
06030006	Bear	1.66	1.11	-0.55	-33%	7.54	7.70	0.17	2%	9.19	8.81	-0.39	-4%

Agriculture Withdrawals

Agriculture Withdrawals – 2010

Agriculture withdrawals for 2010 were derived from the 2010 Report. The agriculture sector consists of aquaculture, golf courses, irrigation, and livestock. Total statewide agriculture withdrawals for 2010 were estimated to be 287 MGD. Estimates of withdrawal by source indicate that the total agriculture surface-water withdrawals were approximately 67 percent (191 MGD) of the total agriculture water withdrawals, with the remaining 33 percent (96 MGD) from groundwater (figure 25). These values differ slightly from the 2010 Report due to rounding techniques, sector consolidation, and some fundamental differences in methodology related to certain sectors. For example, all aquaculture water withdrawals for this report are reported as surface water, whereas in the 2010 Report surface-water and groundwater withdrawals were both reported.

Agriculture withdrawals for 2010 are listed in tables 16, 17, and 18. For 2010, the agriculture sector accounted for 4 percent of the total water withdrawals. The subbasins with the highest agriculture withdrawals for 2010 were the Lower Black Warrior (03160113; 26 MGD), the Middle Coosa (03150106; 20 MGD), the Mobile Bay (03160205; 18 MGD), the Wheeler Lake (06030002; 17 MGD), and the Middle Alabama (03150203; 17 MGD) subbasins (figure 26).

Surface-water withdrawals for 2010 in the agriculture sector accounted for 67 percent of the total agriculture withdrawals. Thirty-one percent (31%) of the total surface-water withdrawals for agriculture occurred in the Lower Black Warrior (03160113; 25 MGD), the Middle Coosa (03150106; 19 MGD), and the Middle Alabama (03150203; 16 MGD) subbasins with the Lower Black Warrior subbasin accounting for 13 percent of all agriculture 2010 surface-water withdrawals.

Groundwater withdrawals in the agriculture sector accounted for 33 percent of the total agriculture withdrawals. Thirty-eight percent (38%) of the total groundwater withdrawals for agriculture occurred in the Mobile Bay (03160205; 12 MGD), the Perdido (03140106; 12 MGD), and the Mobile-Tensaw (03160204; 12 MGD) subbasins with the Mobile Bay subbasin accounting for 13 percent of all agriculture 2010 groundwater withdrawals.

Figure 25. Agriculture withdrawals by source, 2010, in MGD.

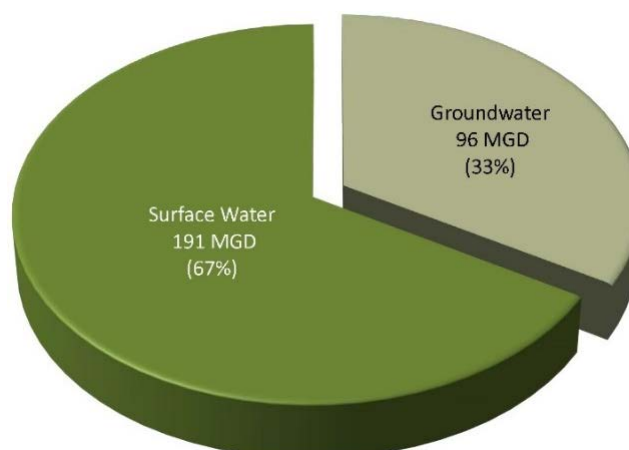


Figure 26. Map of agriculture total withdrawals, 2010, in MGD.

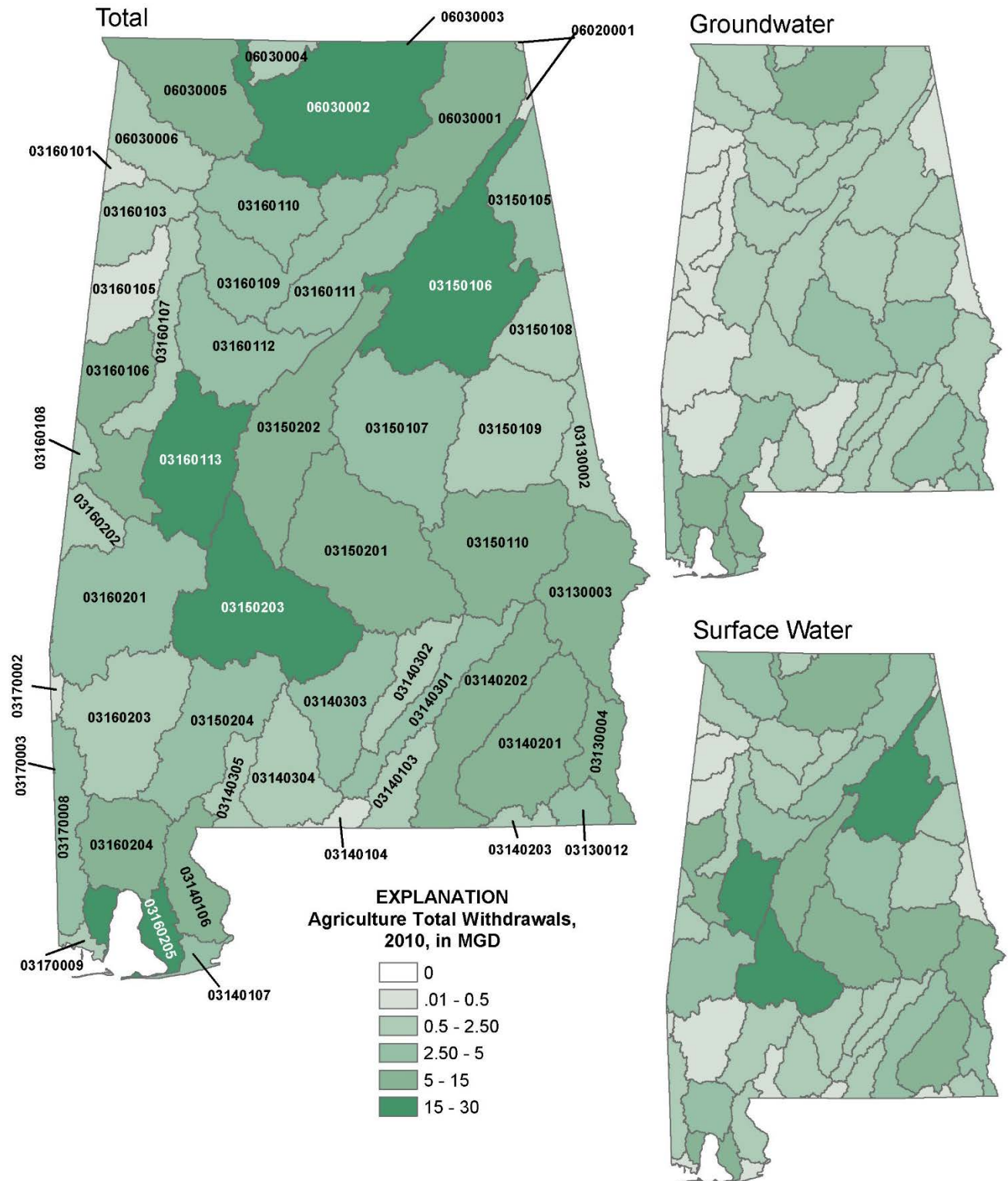


Table 16. Agriculture groundwater withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.09	0.11	0.13	0.22	0.30	0.44	0.49	0.39	0.29	0.23	0.13	0.10	0.24
03130003	Middle Chattahoochee-W.F. George Res.	0.25	0.31	0.43	0.83	1.18	1.78	2.00	1.53	1.14	0.84	0.41	0.28	0.91
03130004	Lower Chattahoochee	0.41	0.77	1.12	2.62	5.52	10.11	11.37	8.02	4.05	2.29	0.76	0.45	3.96
03130012	Chipola	0.29	0.63	0.92	2.22	4.97	9.29	10.45	7.31	3.50	1.88	0.56	0.32	3.53
03140103	Yellow	0.22	0.24	0.33	0.60	0.70	0.89	1.00	0.83	0.79	0.65	0.35	0.25	0.57
03140104	Blackwater	0.04	0.05	0.08	0.16	0.22	0.33	0.37	0.28	0.22	0.17	0.08	0.05	0.17
03140106	Perdido	2.73	3.21	6.07	13.89	15.35	19.21	22.06	18.26	19.35	15.55	6.82	3.60	12.18
03140107	Perdido Bay	0.70	0.83	1.57	3.60	3.97	4.96	5.70	4.72	5.02	4.04	1.77	0.93	3.15
03140201	Upper Choctawhatchee	0.81	1.05	1.36	2.57	4.48	7.56	8.45	6.18	3.65	2.40	1.15	0.86	3.38
03140202	Pea	0.75	0.86	1.11	1.92	2.67	3.96	4.41	3.42	2.57	1.94	1.07	0.82	2.13
03140203	Lower Choctawhatchee	0.13	0.16	0.21	0.39	0.56	0.84	0.94	0.72	0.54	0.40	0.20	0.14	0.44
03140301	Upper Conecuh	0.38	0.42	0.57	1.00	1.24	1.69	1.88	1.52	1.32	1.05	0.58	0.42	1.01
03140302	Patsaliga	0.29	0.30	0.37	0.55	0.59	0.70	0.76	0.66	0.67	0.58	0.38	0.31	0.51
03140303	Sepulga	0.20	0.22	0.24	0.32	0.39	0.50	0.55	0.46	0.39	0.33	0.24	0.21	0.34
03140304	Lower Conecuh	0.15	0.20	0.30	0.62	0.99	1.60	1.80	1.34	0.89	0.61	0.27	0.18	0.75
03140305	Escambia	0.06	0.08	0.12	0.27	0.45	0.73	0.83	0.61	0.39	0.26	0.11	0.07	0.33
03150105	Upper Coosa	0.33	0.33	0.35	0.40	0.42	0.46	0.48	0.44	0.43	0.41	0.35	0.33	0.39
03150106	Middle Coosa	0.72	0.77	0.85	1.13	1.45	1.97	2.15	1.75	1.37	1.13	0.83	0.74	1.24
03150107	Lower Coosa	0.34	0.43	0.56	1.06	1.77	2.92	3.27	2.41	1.50	1.01	0.49	0.36	1.34
03150108	Upper Tallapoosa	0.31	0.36	0.40	0.57	0.93	1.49	1.64	1.23	0.74	0.53	0.35	0.32	0.74
03150109	Middle Tallapoosa	0.27	0.29	0.34	0.51	0.61	0.79	0.87	0.72	0.63	0.52	0.34	0.29	0.51
03150110	Lower Tallapoosa	0.81	0.96	1.66	3.62	4.23	5.56	6.35	5.15	5.03	3.98	1.80	1.02	3.35
03150201	Upper Alabama	1.33	1.53	2.45	5.04	5.88	7.70	8.74	7.12	6.90	5.50	2.63	1.61	4.70
03150202	Cahaba	0.24	0.29	0.37	0.68	1.04	1.64	1.83	1.38	0.93	0.66	0.34	0.26	0.80
03150203	Middle Alabama	0.35	0.37	0.46	0.71	0.82	1.04	1.15	0.96	0.90	0.75	0.47	0.38	0.70
03150204	Lower Alabama	0.72	0.85	1.61	3.67	4.07	5.11	5.87	4.85	5.11	4.10	1.80	0.95	3.23
03160101	Upper Tombigbee	0.05	0.05	0.05	0.06	0.07	0.09	0.09	0.08	0.06	0.06	0.05	0.05	0.06
03160103	Buttahatchee	0.14	0.15	0.16	0.19	0.27	0.40	0.43	0.34	0.23	0.18	0.15	0.14	0.23
03160105	Luxapallila	0.08	0.08	0.09	0.09	0.10	0.12	0.12	0.11	0.10	0.09	0.09	0.08	0.10
03160106	Middle Tombigbee-Lubbub	0.34	0.35	0.38	0.45	0.54	0.69	0.73	0.62	0.52	0.45	0.37	0.35	0.48
03160107	Sipsey	0.16	0.17	0.21	0.33	0.41	0.54	0.60	0.49	0.42	0.34	0.21	0.17	0.34
03160108	Noxubee	0.02	0.02	0.03	0.04	0.06	0.09	0.10	0.08	0.05	0.03	0.02	0.02	0.05
03160109	Mulberry Fork	0.86	0.90	0.98	1.26	1.52	1.97	2.13	1.78	1.48	1.26	0.97	0.88	1.33
03160110	Sipsey Fork	0.69	0.71	0.77	0.93	1.02	1.19	1.27	1.13	1.06	0.96	0.77	0.71	0.93
03160111	Locust Fork	0.53	0.55	0.60	0.77	0.91	1.15	1.24	1.05	0.90	0.78	0.60	0.54	0.80
03160112	Upper Black Warrior	0.21	0.24	0.37	0.76	0.91	1.22	1.38	1.11	1.04	0.82	0.39	0.25	0.73
03160113	Lower Black Warrior	0.28	0.30	0.39	0.64	0.80	1.09	1.21	0.97	0.83	0.67	0.39	0.30	0.66
03160201	Middle Tombigbee-Chickasaw	0.17	0.19	0.20	0.26	0.40	0.61	0.66	0.51	0.32	0.25	0.18	0.17	0.33
03160202	Sucarnoochee	0.06	0.06	0.07	0.10	0.16	0.26	0.29	0.22	0.13	0.09	0.06	0.06	0.13
03160203	Lower Tombigbee	0.14	0.16	0.21	0.37	0.44	0.59	0.66	0.54	0.49	0.39	0.22	0.16	0.36
03160204	Mobile-Tensaw	2.57	3.04	5.73	13.07	14.58	18.41	21.13	17.42	18.23	14.60	6.40	3.39	11.55
03160205	Mobile Bay	2.78	3.27	6.19	14.15	15.71	19.75	22.67	18.73	19.73	15.82	6.94	3.67	12.45
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.59	0.70	1.27	2.85	3.28	4.27	4.89	3.98	3.97	3.15	1.39	0.76	2.59
03170009	Mississippi Coastal	0.31	0.37	0.68	1.54	1.78	2.31	2.64	2.15	2.16	1.71	0.75	0.40	1.40
06020001	Middle Tennessee-Chickamauga	0.07	0.07	0.07	0.09	0.10	0.11	0.12	0.11	0.10	0.09	0.07	0.07	0.09
06030001	Guntersville Lake	1.25	1.28	1.42	1.80	1.88	2.08	2.22	2.03	2.07	1.88	1.45	1.29	1.72
06030002	Wheeler Lake	1.69	2.04	2.85	5.44	7.83	11.93	13.39	10.22	7.53	5.51	2.73	1.89	6.09
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.16	0.19	0.29	0.58	0.74	1.03	1.17	0.92	0.80	0.62	0.30	0.19	0.58
06030005	Pickwick Lake	0.67	0.76	1.04	1.88	2.44	3.45	3.86	3.05	2.52	1.95	1.04	0.75	1.95
06030006	Bear	0.34	0.36	0.37	0.45	0.62	0.89	0.96	0.76	0.53	0.43	0.35	0.34	0.53

Table 17. Agriculture surface-water withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.16	0.18	0.23	0.44	0.61	0.85	0.96	0.79	0.69	0.50	0.25	0.17	0.49
03130003	Middle Chattahoochee-W.F. George Res.	1.73	2.17	3.83	8.90	11.37	15.88	18.13	14.49	13.16	9.88	4.12	2.18	8.82
03130004	Lower Chattahoochee	0.48	0.70	1.04	2.30	4.04	6.82	7.68	5.63	3.49	2.25	0.89	0.54	2.99
03130012	Chipola	0.19	0.28	0.40	1.00	1.87	3.16	3.58	2.71	1.78	1.08	0.36	0.19	1.38
03140103	Yellow	0.41	0.44	0.59	1.04	1.24	1.61	1.80	1.52	1.45	1.15	0.62	0.45	1.03
03140104	Blackwater	0.05	0.06	0.08	0.15	0.18	0.24	0.27	0.22	0.19	0.15	0.08	0.06	0.14
03140106	Perdido	0.48	0.57	1.01	2.34	2.83	3.77	4.31	3.55	3.48	2.66	1.12	0.60	2.23
03140107	Perdido Bay	0.18	0.24	0.74	1.67	1.89	2.38	2.91	2.64	2.49	1.77	0.86	0.21	1.50
03140201	Upper Choctawhatchee	4.62	5.05	6.11	9.20	12.32	17.32	19.36	15.95	12.40	9.36	6.07	4.71	10.21
03140202	Pea	1.10	1.34	1.76	3.30	5.14	8.11	9.09	6.91	4.78	3.34	1.64	1.18	3.97
03140203	Lower Choctawhatchee	0.15	0.18	0.23	0.42	0.59	0.89	1.00	0.77	0.57	0.42	0.22	0.17	0.47
03140301	Upper Conecuh	0.54	0.62	0.84	1.65	2.25	3.19	3.60	2.94	2.53	1.85	0.88	0.59	1.79
03140302	Patsaliga	0.36	0.39	0.43	0.58	0.80	1.16	1.26	1.00	0.71	0.56	0.41	0.37	0.67
03140303	Sepulga	0.90	0.97	1.53	2.48	2.71	3.21	3.80	3.58	3.35	2.54	1.66	0.91	2.30
03140304	Lower Conecuh	0.29	0.31	0.38	0.65	0.87	1.18	1.33	1.13	1.03	0.76	0.40	0.30	0.72
03140305	Escambia	0.05	0.06	0.09	0.22	0.33	0.47	0.54	0.45	0.41	0.28	0.11	0.06	0.25
03150105	Upper Coosa	0.96	1.12	1.73	3.63	4.53	6.15	6.99	5.70	5.29	4.04	1.86	1.12	3.59
03150106	Middle Coosa	4.21	5.01	8.95	19.66	23.59	31.21	35.96	29.94	28.66	21.79	9.87	5.09	18.66
03150107	Lower Coosa	0.81	0.96	1.61	3.62	4.59	6.19	7.13	6.03	5.72	4.18	1.81	0.93	3.63
03150108	Upper Tallapoosa	0.38	0.40	0.44	0.56	0.78	1.12	1.22	0.97	0.68	0.54	0.41	0.38	0.66
03150109	Middle Tallapoosa	1.19	1.23	1.33	1.83	2.27	2.86	3.13	2.79	2.57	2.04	1.37	1.19	1.98
03150110	Lower Tallapoosa	1.33	1.66	3.11	7.19	9.17	12.62	14.59	12.09	11.02	8.03	3.44	1.59	7.15
03150201	Upper Alabama	1.89	2.22	3.54	7.14	9.16	12.65	14.55	12.13	10.57	7.71	3.77	2.09	7.28
03150202	Cahaba	2.93	3.17	4.72	8.47	9.91	12.18	14.18	13.07	12.79	9.50	5.28	3.01	8.27
03150203	Middle Alabama	14.00	14.17	14.61	15.99	17.02	18.83	19.55	18.12	17.08	16.10	14.59	14.12	16.18
03150204	Lower Alabama	0.19	0.22	0.35	0.74	0.90	1.18	1.35	1.12	1.11	0.85	0.38	0.22	0.72
03160101	Upper Tombigbee	0.07	0.07	0.08	0.10	0.11	0.12	0.13	0.12	0.11	0.10	0.08	0.07	0.10
03160103	Buttahatchee	0.18	0.19	0.21	0.30	0.36	0.44	0.49	0.45	0.45	0.35	0.22	0.18	0.32
03160105	Luxapallila	0.11	0.13	0.16	0.29	0.42	0.60	0.68	0.56	0.48	0.34	0.16	0.12	0.34
03160106	Middle Tombigbee-Lubbub	10.30	10.33	10.45	10.82	11.09	11.53	11.71	11.39	11.19	10.90	10.46	10.32	10.87
03160107	Sipsey	0.48	0.51	0.64	1.05	1.24	1.58	1.76	1.50	1.43	1.15	0.67	0.51	1.04
03160108	Noxubee	1.03	1.03	1.04	1.04	1.04	1.05	1.05	1.05	1.05	1.04	1.04	1.03	1.04
03160109	Mulberry Fork	0.97	1.00	1.07	1.55	1.85	2.33	2.55	2.29	2.14	1.69	1.11	0.98	1.63
03160110	Sipsey Fork	0.79	0.85	0.97	1.44	1.93	2.68	2.96	2.44	1.99	1.53	0.97	0.81	1.61
03160111	Locust Fork	0.72	0.81	1.07	2.45	3.54	4.90	5.59	4.91	4.69	3.20	1.27	0.72	2.82
03160112	Upper Black Warrior	0.57	0.72	1.76	4.04	4.65	5.89	7.05	6.30	6.14	4.44	2.06	0.68	3.69
03160113	Lower Black Warrior	24.05	24.10	24.33	25.11	25.39	25.86	26.17	25.84	25.93	25.39	24.43	24.11	25.06
03160201	Middle Tombigbee-Chickasaw	2.26	2.27	2.34	2.69	2.92	3.18	3.35	3.25	3.29	2.91	2.40	2.26	2.76
03160202	Sucarnoochee	0.67	0.68	0.69	0.79	0.85	0.93	0.97	0.95	0.95	0.85	0.71	0.67	0.81
03160203	Lower Tombigbee	0.24	0.24	0.24	0.27	0.28	0.31	0.32	0.31	0.30	0.28	0.24	0.24	0.27
03160204	Mobile-Tensaw	0.66	0.79	1.51	3.21	3.84	5.04	5.91	5.12	4.78	3.50	1.69	0.74	3.07
03160205	Mobile Bay	0.65	0.88	2.36	5.58	6.63	8.56	10.31	9.24	8.78	6.16	2.79	0.76	5.22
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.13	0.16	0.21	0.57	0.86	1.26	1.44	1.23	1.11	0.73	0.25	0.13	0.67
03170009	Mississippi Coastal	0.06	0.08	0.12	0.33	0.51	0.73	0.84	0.71	0.65	0.43	0.15	0.06	0.39
06020001	Middle Tennessee-Chickamauga	0.09	0.09	0.11	0.16	0.18	0.22	0.24	0.21	0.20	0.17	0.11	0.09	0.16
06030001	Guntersville Lake	1.53	1.65	1.98	3.37	4.46	6.04	6.75	5.73	5.13	3.83	2.08	1.58	3.68
06030002	Wheeler Lake	2.36	2.98	4.32	9.26	14.47	22.22	25.30	20.23	15.45	10.28	4.39	2.46	11.14
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.22	0.34	0.50	1.14	2.13	3.69	4.16	3.03	1.79	1.10	0.41	0.24	1.56
06030005	Pickwick Lake	1.03	1.27	2.11	4.28	5.90	8.63	9.97	8.21	6.45	4.44	2.19	1.09	4.63
06030006	Bear	0.50	0.54	0.64	0.98	1.27	1.74	1.92	1.58	1.34	1.05	0.64	0.52	1.06

Table 18. Agriculture total withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.25	0.28	0.37	0.67	0.91	1.30	1.45	1.18	0.98	0.73	0.38	0.27	0.73
03130003	Middle Chattahoochee-W.F. George Res.	1.98	2.47	4.26	9.73	12.55	17.66	20.13	16.02	14.30	10.72	4.53	2.47	9.73
03130004	Lower Chattahoochee	0.89	1.47	2.16	4.93	9.56	16.93	19.06	13.65	7.54	4.54	1.65	1.00	6.95
03130012	Chipola	0.48	0.91	1.32	3.22	6.84	12.45	14.02	10.02	5.28	2.96	0.92	0.51	4.91
03140103	Yellow	0.63	0.68	0.92	1.64	1.94	2.50	2.80	2.35	2.24	1.80	0.97	0.69	1.60
03140104	Blackwater	0.09	0.11	0.16	0.31	0.40	0.57	0.64	0.50	0.42	0.32	0.16	0.11	0.31
03140106	Perdido	3.20	3.78	7.08	16.23	18.18	22.98	26.38	21.81	22.84	18.21	7.95	4.20	14.40
03140107	Perdido Bay	0.88	1.07	2.31	5.28	5.86	7.34	8.61	7.36	7.51	5.80	2.63	1.14	4.65
03140201	Upper Choctawhatchee	5.43	6.10	7.48	11.77	16.80	24.88	27.81	22.13	16.06	11.76	7.22	5.57	13.58
03140202	Pea	1.85	2.20	2.87	5.22	7.81	12.07	13.51	10.33	7.35	5.28	2.71	1.99	6.10
03140203	Lower Choctawhatchee	0.28	0.33	0.44	0.81	1.15	1.73	1.94	1.49	1.11	0.82	0.43	0.31	0.90
03140301	Upper Conecuh	0.93	1.05	1.41	2.65	3.49	4.87	5.48	4.45	3.85	2.90	1.46	1.01	2.80
03140302	Patsaliga	0.65	0.69	0.80	1.13	1.39	1.85	2.03	1.66	1.38	1.14	0.79	0.68	1.18
03140303	Sepulga	1.10	1.18	1.77	2.81	3.09	3.71	4.35	4.04	3.74	2.87	1.90	1.12	2.64
03140304	Lower Conecuh	0.44	0.52	0.68	1.27	1.86	2.79	3.13	2.47	1.92	1.37	0.67	0.47	1.47
03140305	Escambia	0.11	0.15	0.22	0.49	0.77	1.20	1.36	1.06	0.80	0.54	0.22	0.12	0.59
03150105	Upper Coosa	1.29	1.45	2.08	4.03	4.95	6.61	7.46	6.14	5.73	4.45	2.21	1.46	3.99
03150106	Middle Coosa	4.93	5.78	9.80	20.79	25.03	33.18	38.10	31.69	30.02	22.91	10.70	5.83	19.90
03150107	Lower Coosa	1.15	1.39	2.17	4.68	6.36	9.12	10.40	8.44	7.21	5.19	2.30	1.29	4.97
03150108	Upper Tallapoosa	0.69	0.76	0.83	1.13	1.70	2.61	2.86	2.20	1.42	1.07	0.76	0.70	1.39
03150109	Middle Tallapoosa	1.46	1.52	1.67	2.34	2.87	3.65	3.99	3.50	3.20	2.57	1.72	1.48	2.50
03150110	Lower Tallapoosa	2.13	2.62	4.77	10.81	13.40	18.18	20.94	17.23	16.05	12.01	5.24	2.61	10.50
03150201	Upper Alabama	3.22	3.75	5.99	12.17	15.04	20.35	23.29	19.25	17.46	13.20	6.40	3.69	11.99
03150202	Cahaba	3.17	3.46	5.09	9.14	10.95	13.82	16.01	14.44	13.72	10.17	5.63	3.27	9.07
03150203	Middle Alabama	14.35	14.54	15.07	16.70	17.84	19.88	20.70	19.08	17.98	16.85	15.06	14.50	16.88
03150204	Lower Alabama	0.91	1.07	1.95	4.40	4.97	6.29	7.21	5.97	6.21	4.95	2.18	1.18	3.94
03160101	Upper Tombigbee	0.12	0.12	0.13	0.16	0.18	0.21	0.22	0.20	0.18	0.16	0.13	0.12	0.16
03160103	Buttahatchee	0.32	0.33	0.36	0.49	0.64	0.84	0.92	0.79	0.68	0.53	0.37	0.32	0.55
03160105	Luxapallila	0.19	0.21	0.24	0.38	0.52	0.72	0.80	0.67	0.58	0.43	0.25	0.20	0.43
03160106	Middle Tombigbee-Lubbub	10.64	10.69	10.82	11.27	11.63	12.21	12.45	12.01	11.71	11.35	10.83	10.67	11.36
03160107	Sipsey	0.63	0.68	0.85	1.38	1.65	2.12	2.36	1.98	1.85	1.49	0.88	0.68	1.38
03160108	Noxubee	1.05	1.06	1.06	1.08	1.10	1.14	1.15	1.13	1.09	1.08	1.06	1.06	1.09
03160109	Mulberry Fork	1.82	1.90	2.05	2.80	3.37	4.31	4.69	4.07	3.62	2.95	2.08	1.86	2.96
03160110	Sipsey Fork	1.48	1.56	1.73	2.37	2.95	3.87	4.23	3.56	3.05	2.49	1.74	1.51	2.55
03160111	Locust Fork	1.25	1.36	1.67	3.23	4.45	6.04	6.83	5.96	5.60	3.98	1.87	1.26	3.62
03160112	Upper Black Warrior	0.77	0.96	2.13	4.80	5.56	7.11	8.44	7.42	7.18	5.26	2.45	0.92	4.42
03160113	Lower Black Warrior	24.33	24.40	24.72	25.75	26.19	26.94	27.38	26.81	26.76	26.05	24.82	24.41	25.71
03160201	Middle Tombigbee-Chickasaw	2.43	2.46	2.54	2.96	3.32	3.79	4.01	3.76	3.62	3.16	2.59	2.43	3.09
03160202	Sucarnoochee	0.73	0.74	0.76	0.89	1.01	1.19	1.26	1.16	1.08	0.94	0.77	0.73	0.94
03160203	Lower Tombigbee	0.38	0.40	0.45	0.64	0.73	0.90	0.98	0.85	0.79	0.67	0.46	0.40	0.64
03160204	Mobile-Tensaw	3.23	3.82	7.23	16.28	18.42	23.45	27.04	22.54	23.00	18.09	8.09	4.14	14.61
03160205	Mobile Bay	3.43	4.15	8.55	19.73	22.33	28.31	32.98	27.97	28.50	21.99	9.73	4.43	17.68
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.01	0.01	0.01	0.02
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.71	0.85	1.48	3.41	4.15	5.53	6.33	5.21	5.08	3.87	1.64	0.89	3.26
03170009	Mississippi Coastal	0.37	0.44	0.80	1.87	2.28	3.04	3.49	2.87	2.81	2.14	0.89	0.46	1.79
06020001	Middle Tennessee-Chickamauga	0.15	0.16	0.18	0.25	0.28	0.33	0.36	0.31	0.30	0.26	0.18	0.16	0.24
06030001	Guntersville Lake	2.78	2.93	3.40	5.17	6.33	8.12	8.97	7.76	7.20	5.71	3.53	2.87	5.40
06030002	Wheeler Lake	4.05	5.03	7.17	14.70	22.30	34.15	38.70	30.45	22.97	15.79	7.12	4.35	17.23
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.38	0.53	0.79	1.72	2.87	4.73	5.33	3.96	2.59	1.72	0.70	0.43	2.14
06030005	Pickwick Lake	1.70	2.04	3.15	6.16	8.34	12.07	13.83	11.26	8.97	6.39	3.23	1.84	6.58
06030006	Bear	0.84	0.90	1.01	1.44	1.90	2.62	2.88	2.35	1.87	1.48	1.00	0.86	1.59

Agriculture Withdrawals – 2040

Agriculture withdrawals for 2040 were derived from the AUWRC report. Estimates of withdrawal by source indicate that surface-water withdrawals account for 59 percent (275 MGD) of the total 2040 agriculture withdrawals, with the remaining 41 percent from groundwater (188 MGD) (figure 27).

Total agriculture withdrawals for 2040 are listed in tables 19, 20 and 21. For 2040, the agriculture sector accounts for 4 percent of the total withdrawals for 2040 (463 MGD). The subbasins with the largest withdrawals for 2040 are the Mobile Bay (03160205; 49 MGD), the Wheeler Lake (06030002; 41 MGD), the Perdido (03140106; 37 MGD), the Lower Black Warrior (03160113; 30 MGD), the Middle Coosa (03150106; 29 MGD), the Upper Alabama (03150201; 24 MGD), the Upper Choctawhatchee (03140201; 23 MGD), the Middle Alabama (03150203; 23 MGD), the Middle Chattahoochee-W.F. George Reservoir (03130003; 23 MGD), the Lower Tallapoosa (03150110; 16 MGD), and the Pickwick Lake (06030005; 15 MGD) subbasins (figure 28).

Total statewide surface-water withdrawals for the agriculture sector for 2040 account for 59 percent of the total agriculture withdrawals for 2040 (275 MGD). Thirty-six percent (36%) of the surface-water withdrawals for agriculture for 2040 occur in the Middle Coosa (03150106; 27 MGD), the Lower Black Warrior (03160113; 27 MGD), the Wheeler Lake (06030002; 23 MGD), and the Middle Alabama (03150203; 21 MGD) subbasins, with the Middle Coosa subbasin accounting for 10 percent of the surface-water withdrawals for agriculture in 2040.

Groundwater withdrawals for the agriculture sector in 2040 account for 41 percent of the total agriculture withdrawals for 2040 (188 MGD). Forty-eight percent (48%) of the groundwater withdrawals for agriculture for 2040 occur in the Mobile Bay (03160205; 40 MGD), the Perdido (03140106; 32 MGD), and the Wheeler Lake (06030002; 18 MGD) subbasins, with the Mobile Bay subbasin accounting for 21 percent of the groundwater withdrawals for agriculture in 2040.

Figure 27. Agriculture withdrawals by source, 2040, in MGD.

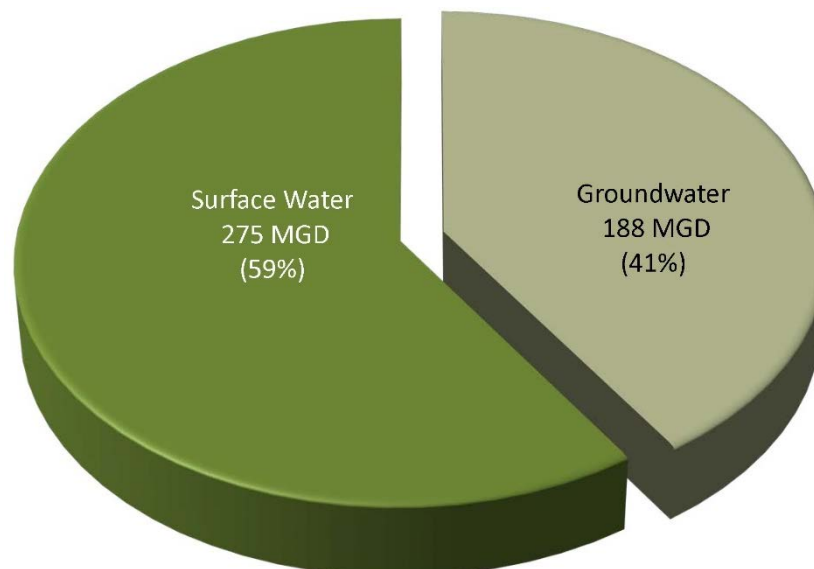


Figure 28. Map of agriculture total withdrawals, 2040, in MGD.

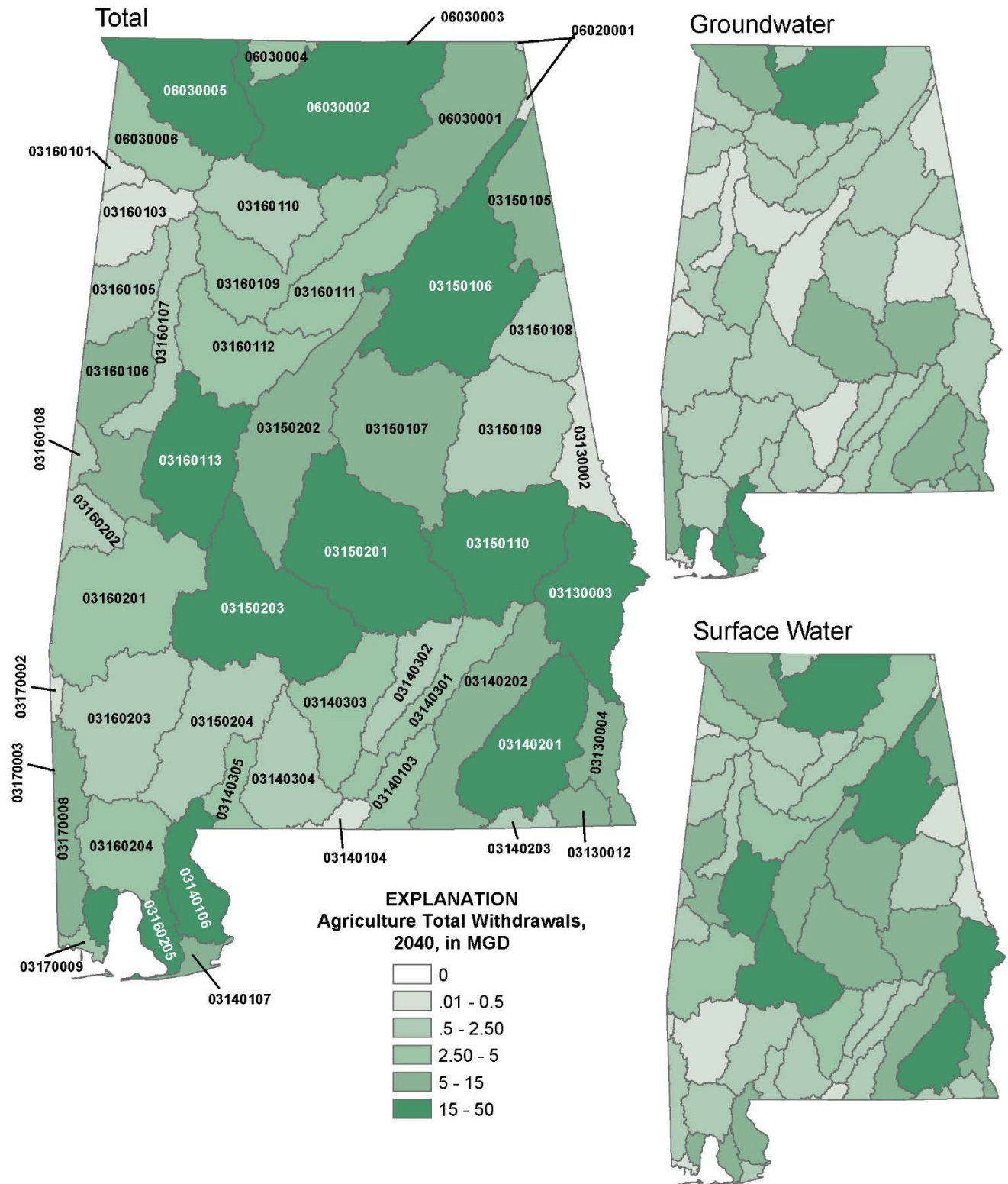


Table 19. Agriculture groundwater withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.06	0.07	0.08	0.12	0.16	0.22	0.24	0.19	0.15	0.12	0.08	0.07	0.13
03130003	Middle Chattahoochee-W.F. George Res.	0.42	0.56	0.84	1.76	2.74	4.39	4.94	3.68	2.53	1.76	0.77	0.48	2.07
03130004	Lower Chattahoochee	1.07	1.58	2.61	6.06	9.71	15.84	17.91	13.23	8.91	6.05	2.37	1.31	7.22
03130012	Chipola	0.85	1.29	2.18	5.12	8.25	13.49	15.26	11.25	7.56	5.11	1.96	1.06	6.11
03140103	Yellow	0.25	0.34	0.50	1.05	1.63	2.60	2.93	2.19	1.50	1.05	0.46	0.29	1.23
03140104	Blackwater	0.05	0.07	0.11	0.23	0.36	0.57	0.65	0.48	0.33	0.23	0.10	0.06	0.27
03140106	Perdido	4.14	6.45	11.06	26.43	42.73	70.07	79.32	58.42	39.16	26.37	9.95	5.22	31.61
03140107	Perdido Bay	1.00	1.55	2.67	6.38	10.31	16.92	19.15	14.10	9.45	6.37	2.40	1.26	7.63
03140201	Upper Choctawhatchee	1.41	1.87	2.80	5.90	9.18	14.69	16.56	12.35	8.46	5.89	2.58	1.62	6.94
03140202	Pea	1.02	1.31	1.88	3.78	5.79	9.17	10.31	7.73	5.35	3.77	1.74	1.15	4.42
03140203	Lower Choctawhatchee	0.21	0.29	0.45	0.99	1.56	2.52	2.84	2.11	1.44	0.99	0.42	0.25	1.17
03140301	Upper Conecuh	0.42	0.50	0.66	1.21	1.78	2.75	3.07	2.33	1.65	1.20	0.62	0.46	1.39
03140302	Patsaliga	0.30	0.33	0.39	0.57	0.77	1.09	1.20	0.95	0.72	0.57	0.37	0.32	0.63
03140303	Sepulga	0.24	0.25	0.27	0.36	0.44	0.59	0.64	0.53	0.42	0.36	0.27	0.24	0.38
03140304	Lower Conecuh	0.14	0.18	0.26	0.52	0.80	1.26	1.42	1.06	0.74	0.52	0.24	0.16	0.61
03140305	Escambia	0.29	0.44	0.75	1.75	2.82	4.61	5.22	3.85	2.59	1.75	0.67	0.36	2.09
03150105	Upper Coosa	0.33	0.34	0.36	0.44	0.52	0.66	0.71	0.60	0.50	0.44	0.36	0.33	0.46
03150106	Middle Coosa	0.79	0.86	1.00	1.46	1.94	2.76	3.03	2.41	1.84	1.45	0.97	0.82	1.61
03150107	Lower Coosa	0.35	0.48	0.74	1.61	2.53	4.07	4.59	3.41	2.33	1.61	0.68	0.42	1.90
03150108	Upper Tallapoosa	0.21	0.24	0.30	0.50	0.71	1.07	1.19	0.92	0.67	0.50	0.28	0.22	0.57
03150109	Middle Tallapoosa	0.20	0.20	0.21	0.22	0.23	0.25	0.26	0.24	0.23	0.22	0.21	0.20	0.22
03150110	Lower Tallapoosa	0.84	1.23	2.02	4.65	7.43	12.10	13.68	10.11	6.82	4.64	1.83	1.02	5.53
03150201	Upper Alabama	1.62	2.33	3.73	8.43	13.40	21.75	24.58	18.19	12.31	8.41	3.40	1.95	10.01
03150202	Cahaba	0.15	0.16	0.19	0.29	0.40	0.58	0.64	0.50	0.38	0.29	0.19	0.16	0.33
03150203	Middle Alabama	0.42	0.52	0.74	1.46	2.23	3.52	3.95	2.97	2.06	1.46	0.69	0.47	1.71
03150204	Lower Alabama	0.31	0.42	0.64	1.38	2.17	3.49	3.94	2.93	2.00	1.38	0.59	0.36	1.63
03160101	Upper Tombigbee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03160103	Buttahatchee	0.36	0.49	0.76	1.64	2.58	4.16	4.69	3.49	2.38	1.64	0.69	0.42	1.94
03160105	Luxapallila	0.06	0.06	0.07	0.09	0.12	0.17	0.18	0.15	0.12	0.09	0.07	0.06	0.10
03160106	Middle Tombigbee-Lubbub	0.33	0.35	0.39	0.53	0.67	0.91	0.99	0.81	0.64	0.53	0.38	0.34	0.58
03160107	Sipsey	0.12	0.14	0.17	0.26	0.37	0.54	0.60	0.47	0.34	0.26	0.16	0.13	0.30
03160108	Noxubee	0.04	0.06	0.09	0.19	0.29	0.47	0.53	0.39	0.27	0.19	0.08	0.05	0.22
03160109	Mulberry Fork	0.86	0.93	1.09	1.61	2.15	3.07	3.38	2.68	2.03	1.60	1.05	0.89	1.78
03160110	Sipsey Fork	0.56	0.57	0.58	0.61	0.65	0.72	0.74	0.69	0.64	0.61	0.58	0.57	0.63
03160111	Locust Fork	0.51	0.53	0.58	0.74	0.92	1.20	1.30	1.08	0.88	0.74	0.57	0.52	0.80
03160112	Upper Black Warrior	0.09	0.10	0.13	0.22	0.31	0.46	0.51	0.39	0.29	0.21	0.12	0.10	0.24
03160113	Lower Black Warrior	0.52	0.72	1.11	2.43	3.83	6.18	6.97	5.18	3.52	2.43	1.02	0.61	2.88
03160201	Middle Tombigbee-Chickasaw	0.20	0.24	0.32	0.58	0.85	1.30	1.45	1.11	0.79	0.57	0.30	0.22	0.66
03160202	Sucarnoochee	0.05	0.05	0.06	0.10	0.14	0.20	0.22	0.18	0.13	0.10	0.06	0.05	0.11
03160203	Lower Tombigbee	0.15	0.18	0.25	0.48	0.72	1.13	1.27	0.96	0.67	0.48	0.23	0.16	0.56
03160204	Mobile-Tensaw	0.20	0.27	0.42	0.93	1.46	2.35	2.66	1.97	1.34	0.92	0.39	0.23	1.10
03160205	Mobile Bay	5.24	8.15	13.96	33.38	53.94	88.46	100.14	73.75	49.44	33.30	12.57	6.59	39.91
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	1.25	1.92	3.25	7.71	12.44	20.37	23.05	16.99	11.40	7.69	2.93	1.56	9.21
03170009	Mississippi Coastal	0.33	0.50	0.84	1.99	3.21	5.26	5.95	4.39	2.95	1.99	0.76	0.41	2.38
06020001	Middle Tennessee-Chickamauga	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
06030001	Guntersville Lake	1.21	1.27	1.40	1.82	2.27	3.02	3.27	2.70	2.17	1.82	1.37	1.24	1.96
06030002	Wheeler Lake	3.03	4.26	6.72	14.93	23.63	38.24	43.18	32.01	21.73	14.90	6.13	3.60	17.70
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.14	0.19	0.29	0.61	0.94	1.51	1.70	1.27	0.87	0.60	0.26	0.17	0.71
06030005	Pickwick Lake	1.06	1.43	2.17	4.65	7.28	11.70	13.19	9.82	6.71	4.64	1.99	1.23	5.49
06030006	Bear	0.42	0.49	0.62	1.09	1.57	2.39	2.67	2.04	1.47	1.08	0.59	0.45	1.24

Table 20. Agriculture surface-water withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.11	0.12	0.17	0.31	0.40	0.54	0.62	0.53	0.46	0.34	0.18	0.12	0.32
03130003	Middle Chattahoochee-W.F. George Res.	2.83	4.27	7.34	17.33	27.46	44.40	50.39	37.59	25.93	17.52	6.79	3.53	20.45
03130004	Lower Chattahoochee	0.88	1.24	1.99	4.47	7.04	11.34	12.83	9.56	6.56	4.49	1.84	1.05	5.28
03130012	Chipola	0.34	0.48	0.87	2.05	3.01	4.58	5.27	4.16	3.22	2.18	0.89	0.42	2.29
03140103	Yellow	0.46	0.58	0.84	1.69	2.53	3.94	4.44	3.39	2.43	1.72	0.80	0.52	1.95
03140104	Blackwater	0.05	0.06	0.09	0.18	0.28	0.45	0.50	0.38	0.26	0.18	0.09	0.06	0.22
03140106	Perdido	0.70	1.07	1.87	4.45	7.06	11.40	12.95	9.67	6.69	4.51	1.73	0.88	5.25
03140107	Perdido Bay	0.25	0.38	0.86	2.20	3.11	4.57	5.34	4.40	3.66	2.45	0.95	0.35	2.38
03140201	Upper Choctawhatchee	5.27	6.07	8.30	14.94	20.51	29.63	33.53	27.07	21.49	15.66	8.37	5.76	16.38
03140202	Pea	1.67	2.21	3.34	7.06	10.88	17.25	19.48	14.65	10.23	7.11	3.12	1.93	8.25
03140203	Lower Choctawhatchee	0.23	0.32	0.48	1.04	1.62	2.61	2.94	2.19	1.50	1.04	0.44	0.27	1.22
03140301	Upper Conecuh	0.61	0.73	1.06	2.07	2.95	4.41	5.01	3.95	3.02	2.15	1.06	0.68	2.31
03140302	Patsaliga	0.43	0.46	0.52	0.75	0.98	1.37	1.50	1.20	0.93	0.74	0.51	0.44	0.82
03140303	Sepulga	0.96	1.06	1.60	2.97	3.61	4.55	5.33	4.88	4.69	3.38	1.80	1.07	2.99
03140304	Lower Conecuh	0.27	0.29	0.39	0.64	0.80	1.04	1.19	1.04	0.93	0.70	0.41	0.29	0.67
03140305	Escambia	0.12	0.17	0.30	0.68	1.02	1.59	1.82	1.40	1.03	0.70	0.29	0.15	0.77
03150105	Upper Coosa	1.51	1.91	2.80	5.67	8.54	13.32	15.04	11.44	8.18	5.75	2.66	1.71	6.55
03150106	Middle Coosa	4.44	6.22	10.46	23.77	36.29	57.06	64.97	49.63	35.91	24.52	10.10	5.38	27.40
03150107	Lower Coosa	0.73	1.03	1.92	4.54	6.63	10.03	11.57	9.20	7.19	4.87	1.99	0.92	5.05
03150108	Upper Tallapoosa	0.23	0.25	0.29	0.42	0.56	0.80	0.88	0.70	0.53	0.42	0.28	0.24	0.47
03150109	Middle Tallapoosa	1.03	1.06	1.21	1.59	1.75	1.99	2.20	2.10	2.08	1.71	1.27	1.06	1.59
03150110	Lower Tallapoosa	1.58	2.25	3.99	9.28	13.99	21.76	24.89	19.26	14.31	9.72	3.94	1.96	10.58
03150201	Upper Alabama	3.00	3.78	5.82	12.02	17.47	26.44	30.10	23.62	17.94	12.56	5.79	3.45	13.50
03150202	Cahaba	2.56	2.80	4.18	7.66	9.20	11.45	13.41	12.42	12.06	8.73	4.73	2.83	7.67
03150203	Middle Alabama	13.54	14.20	15.51	19.88	24.49	32.24	34.86	28.95	23.50	19.86	15.20	13.85	21.34
03150204	Lower Alabama	0.21	0.23	0.30	0.50	0.66	0.92	1.04	0.86	0.71	0.53	0.31	0.22	0.54
03160101	Upper Tombigbee	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
03160103	Buttahatchee	0.20	0.22	0.30	0.51	0.67	0.94	1.07	0.88	0.72	0.53	0.30	0.22	0.55
03160105	Luxapallila	0.11	0.15	0.24	0.51	0.75	1.13	1.29	1.02	0.78	0.54	0.24	0.13	0.57
03160106	Middle Tombigbee-Lubbub	9.49	9.56	9.73	10.27	10.78	11.64	11.96	11.32	10.75	10.29	9.71	9.52	10.42
03160107	Sipsey	0.42	0.47	0.57	0.90	1.20	1.68	1.88	1.52	1.22	0.93	0.57	0.45	0.98
03160108	Noxubee	1.00	1.01	1.02	1.05	1.09	1.16	1.18	1.13	1.09	1.05	1.02	1.00	1.07
03160109	Mulberry Fork	0.91	0.98	1.19	1.81	2.30	3.08	3.44	2.90	2.44	1.89	1.21	0.95	1.93
03160110	Sipsey Fork	0.64	0.66	0.76	1.01	1.16	1.40	1.55	1.40	1.30	1.06	0.78	0.66	1.03
03160111	Locust Fork	0.70	0.82	1.43	2.99	3.74	4.87	5.76	5.20	4.91	3.43	1.65	0.82	3.03
03160112	Upper Black Warrior	0.29	0.41	1.04	2.63	3.41	4.58	5.49	4.90	4.60	3.08	1.26	0.42	2.68
03160113	Lower Black Warrior	22.44	22.81	23.61	26.19	28.76	33.03	34.58	31.37	28.46	26.27	23.49	22.62	26.97
03160201	Middle Tombigbee-Chickasaw	2.17	2.19	2.37	2.81	2.99	3.25	3.50	3.40	3.38	2.96	2.45	2.20	2.81
03160202	Sucarnoochee	0.60	0.61	0.64	0.74	0.78	0.84	0.89	0.87	0.87	0.77	0.66	0.61	0.74
03160203	Lower Tombigbee	0.23	0.23	0.24	0.27	0.30	0.35	0.37	0.33	0.31	0.28	0.24	0.23	0.28
03160204	Mobile-Tensaw	0.38	0.45	0.84	1.82	2.26	2.91	3.46	3.17	3.06	2.12	0.99	0.46	1.83
03160205	Mobile Bay	1.06	1.63	3.45	8.64	12.52	18.78	21.81	17.58	14.10	9.44	3.68	1.45	9.51
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.18	0.24	0.45	1.03	1.45	2.14	2.48	2.02	1.64	1.12	0.47	0.22	1.12
03170009	Mississippi Coastal	0.07	0.09	0.18	0.44	0.59	0.83	0.98	0.83	0.73	0.50	0.21	0.09	0.46
06020001	Middle Tennessee-Chickamauga	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
06030001	Guntersville Lake	1.55	1.75	2.37	4.16	5.48	7.63	8.67	7.22	6.03	4.43	2.45	1.69	4.45
06030002	Wheeler Lake	3.92	5.38	9.12	20.56	30.80	47.69	54.46	42.19	31.37	21.46	8.99	4.74	23.39
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.31	0.44	0.73	1.65	2.57	4.11	4.66	3.51	2.46	1.68	0.68	0.37	1.93
06030005	Pickwick Lake	1.70	2.32	3.90	8.74	13.05	20.16	23.02	17.86	13.32	9.13	3.85	2.05	9.92
06030006	Bear	0.69	0.86	1.22	2.40	3.60	5.60	6.31	4.80	3.42	2.43	1.16	0.77	2.77

Table 21. Total agriculture withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.17	0.19	0.25	0.42	0.55	0.76	0.86	0.72	0.61	0.45	0.26	0.18	0.45
03130003	Middle Chattahoochee-W.F. George Res.	3.25	4.82	8.17	19.09	30.20	48.79	55.33	41.28	28.45	19.28	7.56	4.02	22.52
03130004	Lower Chattahoochee	1.94	2.82	4.61	10.53	16.75	27.18	30.75	22.79	15.47	10.54	4.20	2.36	12.50
03130012	Chipola	1.19	1.77	3.05	7.17	11.26	18.07	20.53	15.42	10.78	7.29	2.86	1.48	8.41
03140103	Yellow	0.72	0.92	1.34	2.74	4.16	6.54	7.37	5.57	3.93	2.76	1.27	0.81	3.18
03140104	Blackwater	0.10	0.13	0.20	0.41	0.64	1.02	1.15	0.86	0.59	0.41	0.18	0.12	0.48
03140106	Perdido	4.85	7.52	12.93	30.89	49.78	81.47	92.27	68.09	45.85	30.88	11.69	6.10	36.86
03140107	Perdido Bay	1.25	1.94	3.53	8.58	13.43	21.49	24.49	18.51	13.12	8.81	3.35	1.60	10.01
03140201	Upper Choctawhatchee	6.68	7.95	11.10	20.84	29.69	44.32	50.09	39.41	29.96	21.55	10.95	7.38	23.33
03140202	Pea	2.69	3.51	5.22	10.84	16.66	26.42	29.80	22.38	15.58	10.88	4.86	3.08	12.66
03140203	Lower Choctawhatchee	0.45	0.61	0.94	2.03	3.19	5.13	5.78	4.30	2.93	2.03	0.86	0.52	2.40
03140301	Upper Conecuh	1.03	1.23	1.73	3.27	4.73	7.16	8.08	6.28	4.68	3.35	1.68	1.14	3.70
03140302	Patsaliga	0.73	0.79	0.91	1.32	1.74	2.46	2.71	2.16	1.65	1.31	0.88	0.76	1.45
03140303	Sepulga	1.20	1.30	1.87	3.33	4.05	5.14	5.97	5.41	5.11	3.73	2.07	1.31	3.37
03140304	Lower Conecuh	0.41	0.48	0.65	1.16	1.60	2.31	2.61	2.10	1.67	1.22	0.65	0.45	1.28
03140305	Escambia	0.42	0.62	1.04	2.43	3.84	6.21	7.04	5.25	3.62	2.45	0.96	0.52	2.87
03150105	Upper Coosa	1.83	2.25	3.17	6.11	9.06	13.98	15.75	12.05	8.68	6.19	3.02	2.04	7.01
03150106	Middle Coosa	5.23	7.08	11.46	25.23	38.23	59.81	68.00	52.04	37.75	25.97	11.06	6.21	29.01
03150107	Lower Coosa	1.08	1.51	2.67	6.15	9.16	14.10	16.15	12.61	9.52	6.48	2.67	1.33	6.95
03150108	Upper Tallapoosa	0.43	0.48	0.58	0.92	1.28	1.87	2.08	1.62	1.20	0.92	0.56	0.46	1.03
03150109	Middle Tallapoosa	1.24	1.26	1.42	1.81	1.98	2.24	2.46	2.35	2.30	1.93	1.48	1.27	1.81
03150110	Lower Tallapoosa	2.42	3.49	6.01	13.93	21.42	33.86	38.57	29.37	21.13	14.35	5.77	2.98	16.11
03150201	Upper Alabama	4.62	6.11	9.55	20.44	30.87	48.19	54.67	41.81	30.25	20.96	9.19	5.40	23.51
03150202	Cahaba	2.71	2.96	4.38	7.95	9.60	12.03	14.05	12.92	12.44	9.02	4.92	2.99	8.00
03150203	Middle Alabama	13.96	14.72	16.25	21.34	26.72	35.76	38.82	31.92	25.56	21.32	15.89	14.32	23.05
03150204	Lower Alabama	0.51	0.65	0.94	1.89	2.83	4.41	4.97	3.79	2.71	1.91	0.89	0.58	2.17
03160101	Upper Tombigbee	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.11
03160103	Buttahatchee	0.56	0.72	1.05	2.15	3.26	5.10	5.76	4.37	3.10	2.17	0.99	0.64	2.49
03160105	Luxapallila	0.17	0.21	0.31	0.60	0.87	1.30	1.47	1.16	0.89	0.63	0.30	0.19	0.68
03160106	Middle Tombigbee-Lubbub	9.82	9.91	10.12	10.80	11.45	12.55	12.95	12.13	11.39	10.82	10.10	9.87	10.99
03160107	Sipsey	0.55	0.60	0.74	1.17	1.56	2.22	2.47	1.99	1.56	1.19	0.73	0.58	1.28
03160108	Noxubee	1.05	1.07	1.11	1.24	1.39	1.63	1.71	1.53	1.36	1.24	1.10	1.05	1.29
03160109	Mulberry Fork	1.77	1.91	2.28	3.42	4.45	6.16	6.83	5.58	4.48	3.50	2.26	1.85	3.71
03160110	Sipsey Fork	1.20	1.23	1.34	1.62	1.82	2.12	2.29	2.09	1.94	1.68	1.36	1.23	1.66
03160111	Locust Fork	1.21	1.35	2.01	3.73	4.66	6.08	7.06	6.28	5.79	4.18	2.22	1.34	3.83
03160112	Upper Black Warrior	0.38	0.51	1.16	2.84	3.72	5.04	6.00	5.29	4.88	3.30	1.38	0.51	2.92
03160113	Lower Black Warrior	22.96	23.52	24.72	28.63	32.59	39.21	41.55	36.55	31.98	28.70	24.51	23.23	29.84
03160201	Middle Tombigbee-Chickasaw	2.37	2.44	2.69	3.39	3.84	4.55	4.95	4.51	4.17	3.53	2.75	2.42	3.47
03160202	Sucarnoochee	0.65	0.66	0.71	0.84	0.92	1.04	1.12	1.05	1.00	0.87	0.72	0.66	0.85
03160203	Lower Tombigbee	0.38	0.41	0.49	0.76	1.03	1.48	1.64	1.29	0.98	0.76	0.48	0.39	0.84
03160204	Mobile-Tensaw	0.58	0.72	1.27	2.75	3.72	5.26	6.12	5.15	4.41	3.05	1.38	0.69	2.92
03160205	Mobile Bay	6.30	9.77	17.41	42.02	66.47	107.24	121.95	91.33	63.54	42.74	16.25	8.04	49.42
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	1.43	2.16	3.70	8.74	13.89	22.51	25.53	19.01	13.05	8.82	3.41	1.78	10.33
03170009	Mississippi Coastal	0.39	0.59	1.03	2.43	3.81	6.09	6.93	5.22	3.68	2.49	0.97	0.49	2.84
06020001	Middle Tennessee-Chickamauga	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
06030001	Guntersville Lake	2.76	3.02	3.77	5.98	7.75	10.65	11.94	9.92	8.20	6.25	3.82	2.92	6.42
06030002	Wheeler Lake	6.94	9.64	15.83	35.49	54.43	85.93	97.64	74.21	53.10	36.36	15.12	8.34	41.09
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.45	0.63	1.01	2.26	3.51	5.61	6.36	4.77	3.33	2.28	0.95	0.54	2.64
06030005	Pickwick Lake	2.76	3.74	6.07	13.39	20.33	31.86	36.21	27.68	20.03	13.77	5.85	3.28	15.41
06030006	Bear	1.11	1.34	1.85	3.49	5.17	7.99	8.98	6.84	4.89	3.51	1.75	1.22	4.01

Agriculture Withdrawals Comparing 2010 to 2040

The comparison of groundwater, surface-water, and total agricultural withdrawals from 2010 to 2040 is shown in table 22. Total agriculture withdrawals increase from 287 MGD in 2010 to 463 MGD in 2040, an increase of 176 MGD (61%) (figure 29). The Mobile Bay (03160205; 32 MGD), the Wheeler Lake (06030002; 24 MGD), the Perdido (03140106; 22 MGD), the Middle Chattahoochee-W.F. George Reservoir (03130003; 13 MGD), and the Upper Alabama (03150201; 12 MGD), subbasins have the largest increases in agriculture withdrawals from 2010 to 2040. The Mobile-Tensaw (03160204; -12 MGD), the Lower Alabama (03150204; -2 MGD) the Upper Black Warrior (03160112; -2 MGD), and the Cahaba (03150202; -1 MGD) subbasins have the largest decreases in agriculture withdrawals from 2010 to 2040 (figure 30).

Surface-water withdrawals are projected to increase from 191 MGD in 2010 to 275 MGD in 2040, an increase of 84 MGD (44%). The Wheeler Lake (06030002; 12 MGD), the Middle Chattahoochee-W.F. George Reservoir (03130003; 12 MGD), and the Middle Coosa (03150206; 9 MGD) subbasins have the largest increases in surface-water withdrawals. The Mobile-Tensaw (03160204; -1 MGD) and the Upper Black Warrior (03160112; -1 MGD) subbasins have the largest decreases in surface-water withdrawals from 2010 to 2040.

Groundwater withdrawals are projected to increase from 96 MGD in 2010 to 188 MGD in 2040, an increase of 92 MGD (96%). The Mobile Bay (03160205; 27 MGD), the Perdido (03140106; 19 MGD) and the Wheeler Lake (06030002; 12 MGD) subbasins have the largest increases in groundwater withdrawals in agriculture. The Mobile-Tensaw (03160204; -10 MGD) and the Lower Alabama (03150204; -2 MGD) subbasins have the largest decreases in withdrawals from 2010 to 2040.

Figure 29. Comparison of agriculture withdrawals, 2010 to 2040, in MGD.

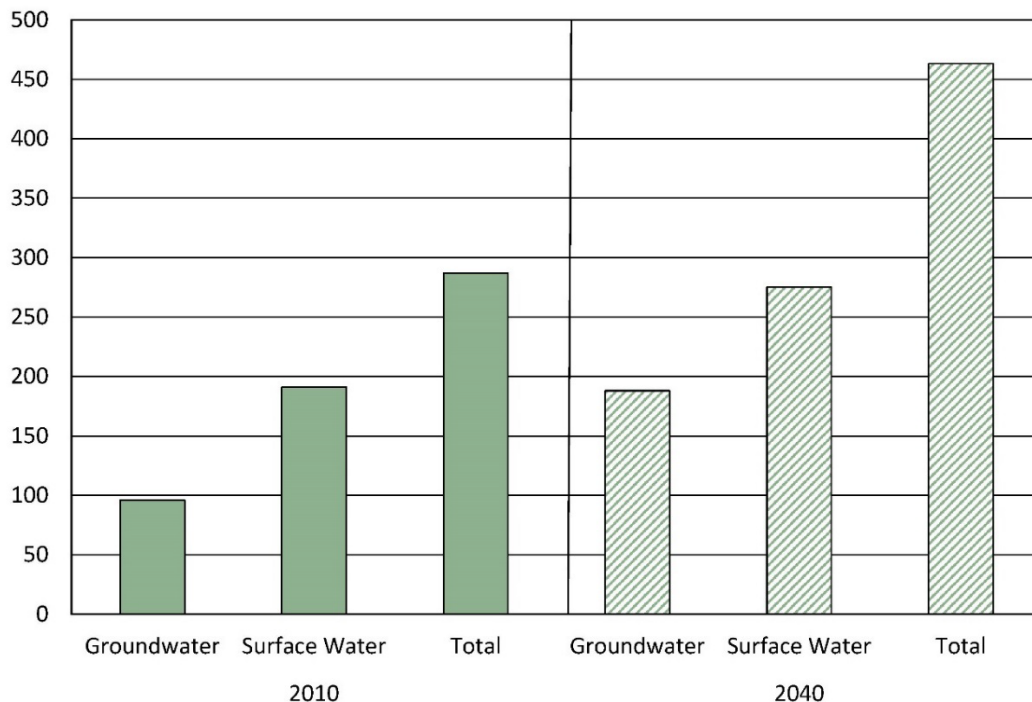


Figure 30. Map of agriculture withdrawal comparison, 2010 to 2040, in MGD.

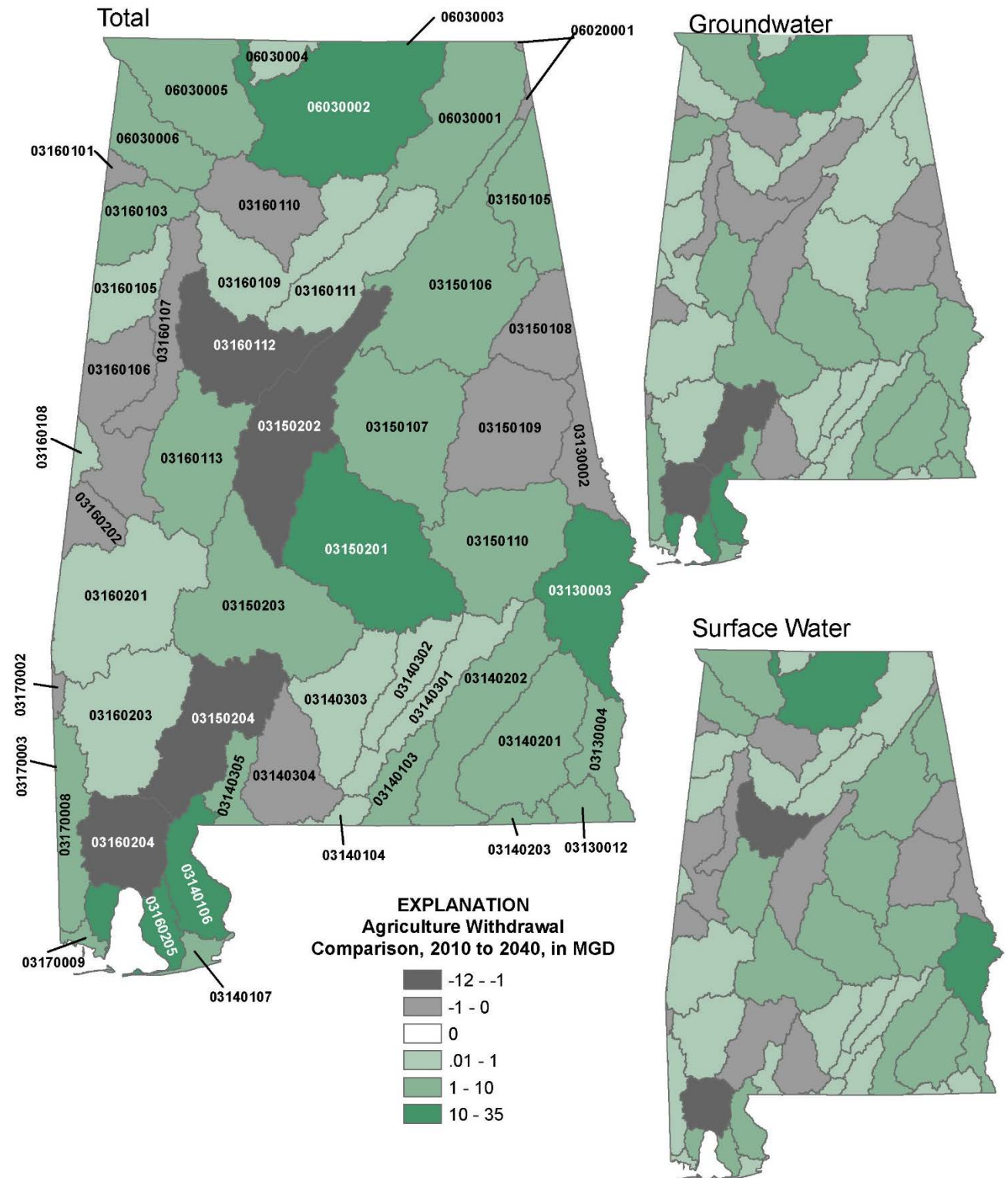


Table 22. Agriculture withdrawal comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	Groundwater				Surface Water				Total Withdrawals			
		2010 Average	2040 Average	Change in Withdrawal	Percent Change	2010 Average	2040 Average	Change in Withdrawal	Percent Change	2010 Average	2040 Average	Change in Withdrawal	Percent Change
03130002	Middle Chattahoochee-Lake Harding	0.24	0.13	-0.11	-47%	0.49	0.32	-0.16	-33%	0.73	0.45	-0.28	-38%
03130003	Middle Chattahoochee-W.F. George Res.	0.91	2.07	1.16	127%	8.82	20.45	11.63	132%	9.73	22.52	12.78	131%
03130004	Lower Chattahoochee	3.96	7.22	3.26	82%	2.99	5.28	2.29	77%	6.95	12.50	5.55	80%
03130012	Chipola	3.53	6.11	2.59	73%	1.38	2.29	0.91	65%	4.91	8.41	3.50	71%
03140103	Yellow	0.57	1.23	0.66	116%	1.03	1.95	0.92	90%	1.60	3.18	1.58	99%
03140104	Blackwater	0.17	0.27	0.10	57%	0.14	0.22	0.07	50%	0.31	0.48	0.17	54%
03140106	Perdido	12.18	31.61	19.43	160%	2.23	5.25	3.02	136%	14.40	36.86	22.46	156%
03140107	Perdido Bay	3.15	7.63	4.48	142%	1.50	2.38	0.88	59%	4.65	10.01	5.36	115%
03140201	Upper Choctawhatchee	3.38	6.94	3.57	106%	10.21	16.38	6.18	61%	13.58	23.33	9.74	72%
03140202	Pea	2.13	4.42	2.29	108%	3.97	8.25	4.27	108%	6.10	12.66	6.56	108%
03140203	Lower Choctawhatchee	0.44	1.17	0.74	169%	0.47	1.22	0.76	162%	0.90	2.40	1.49	166%
03140301	Upper Conecuh	1.01	1.39	0.38	38%	1.79	2.31	0.52	29%	2.80	3.70	0.90	32%
03140302	Patsaliga	0.51	0.63	0.12	23%	0.67	0.82	0.15	22%	1.18	1.45	0.27	23%
03140303	Sepulga	0.34	0.38	0.05	14%	2.30	2.99	0.69	30%	2.64	3.37	0.74	28%
03140304	Lower Conecuh	0.75	0.61	-0.14	-18%	0.72	0.67	-0.05	-7%	1.47	1.28	-0.19	-13%
03140305	Escambia	0.33	2.09	1.76	530%	0.25	0.77	0.52	204%	0.59	2.87	2.28	389%
03150105	Upper Coosa	0.39	0.46	0.07	18%	3.59	6.55	2.95	82%	3.99	7.01	3.02	76%
03150106	Middle Coosa	1.24	1.61	0.37	30%	18.66	27.40	8.73	47%	19.90	29.01	9.11	46%
03150107	Lower Coosa	1.34	1.90	0.56	41%	3.63	5.05	1.42	39%	4.97	6.95	1.98	40%
03150108	Upper Tallapoosa	0.74	0.57	-0.17	-23%	0.66	0.47	-0.19	-29%	1.39	1.03	-0.36	-26%
03150109	Middle Tallapoosa	0.51	0.22	-0.29	-57%	1.98	1.59	-0.39	-20%	2.50	1.81	-0.69	-27%
03150110	Lower Tallapoosa	3.35	5.53	2.19	65%	7.15	10.58	3.42	48%	10.50	16.11	5.61	53%
03150201	Upper Alabama	4.70	10.01	5.31	113%	7.28	13.50	6.21	85%	11.99	23.51	11.52	96%
03150202	Cahaba	0.80	0.33	-0.48	-59%	8.27	7.67	-0.60	-7%	9.07	8.00	-1.08	-12%
03150203	Middle Alabama	0.70	1.71	1.01	145%	16.18	21.34	5.16	32%	16.88	23.05	6.17	37%
03150204	Lower Alabama	3.23	1.63	-1.59	-49%	0.72	0.54	-0.18	-24%	3.94	2.17	-1.77	-45%
03160101	Upper Tombigbee	0.06	0.05	-0.02	-26%	0.10	0.06	-0.04	-39%	0.16	0.11	-0.05	-34%
03160103	Buttahatchee	0.23	1.94	1.71	744%	0.32	0.55	0.23	72%	0.55	2.49	1.94	355%
03160105	Luxapallila	0.10	0.10	0.01	7%	0.34	0.57	0.24	70%	0.43	0.68	0.24	56%
03160106	Middle Tombigbee-Lubbub	0.48	0.58	0.09	19%	10.87	10.42	-0.46	-4%	11.36	10.99	-0.36	-3%
03160107	Sipsey	0.34	0.30	-0.04	-12%	1.04	0.98	-0.06	-6%	1.38	1.28	-0.10	-7%
03160108	Noxubee	0.05	0.22	0.17	370%	1.04	1.07	0.03	3%	1.09	1.29	0.20	18%
03160109	Mulberry Fork	1.33	1.78	0.45	34%	1.63	1.93	0.30	18%	2.96	3.71	0.75	25%
03160110	Sipsey Fork	0.93	0.63	-0.31	-33%	1.61	1.03	-0.58	-36%	2.55	1.66	-0.89	-35%
03160111	Locust Fork	0.80	0.80	0.00	0%	2.82	3.03	0.20	7%	3.62	3.83	0.20	6%
03160112	Upper Black Warrior	0.73	0.24	-0.48	-66%	3.69	2.68	-1.02	-28%	4.42	2.92	-1.50	-34%
03160113	Lower Black Warrior	0.66	2.88	2.22	339%	25.06	26.97	1.91	8%	25.71	29.84	4.13	16%
03160201	Middle Tombigbee-Chickasaw	0.33	0.66	0.33	102%	2.76	2.81	0.04	2%	3.09	3.47	0.38	12%
03160202	Sucarnoochee	0.13	0.11	-0.02	-13%	0.81	0.74	-0.07	-8%	0.94	0.85	-0.09	-9%
03160203	Lower Tombigbee	0.36	0.56	0.20	54%	0.27	0.28	0.01	3%	0.64	0.84	0.20	32%
03160204	Mobile-Tensaw	11.55	1.10	-10.45	-91%	3.07	1.83	-1.24	-40%	14.61	2.92	-11.69	-80%
03160205	Mobile Bay	12.45	39.91	27.46	221%	5.22	9.51	4.29	82%	17.68	49.42	31.75	180%
03170002	Upper Chickasawhay	0.01	0.00	-0.01	-100%	0.01	0.01	0.00	-6%	0.02	0.01	-0.01	-41%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
03170008	Escatawpa	2.59	9.21	6.62	256%	0.67	1.12	0.45	66%	3.26	10.33	7.07	217%
03170009	Mississippi Coastal	1.40	2.38	0.98	70%	0.39	0.46	0.07	19%	1.79	2.84	1.06	59%
06020001	Middle Tennessee-Chickamauga	0.09	0.06	-0.03	-35%	0.16	0.07	-0.09	-57%	0.24	0.12	-0.12	-49%
06030001	Guntersville Lake	1.72	1.96	0.24	14%	3.68	4.45	0.77	21%	5.40	6.42	1.02	19%
06030002	Wheeler Lake	6.09	17.70	11.61	191%	11.14	23.39	12.25	110%	17.23	41.09	23.86	138%
06030003	Elk	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
06030004	Lower Elk	0.58	0.71	0.13	23%	1.56	1.93	0.37	23%	2.14	2.64	0.50	23%
06030005	Pickwick Lake	1.95	5.49	3.54	182%	4.63	9.92	5.29	114%	6.58	15.41	8.83	134%
06030006	Bear	0.53	1.24	0.71	133%	1.06	2.77	1.71	161%	1.59	4.01	2.42	152%

Industrial, Thermoelectric, and Mining Withdrawals

Industrial, Thermoelectric, and Mining Withdrawals – 2010

Total industrial, thermoelectric, and mining withdrawals for 2010 were derived from the 2010 Report. Total statewide industrial, thermoelectric, and mining withdrawals accounted for 88 percent (8,840 MGD) of total withdrawals for 2010. Estimates of withdrawal by source indicate that surface-water withdrawals accounted for 99.5 percent of all industrial, thermoelectric, and mining withdrawals for 2010, with groundwater making up the remaining 0.5 percent (figure 31). These values vary slightly from the 2010 Report due to the additional analysis of mining water withdrawals at the subbasin level.

Total industrial, thermoelectric, and mining withdrawals for 2010 are listed in tables 23, 24, and 25. Fifty-nine percent (59%) of the total industrial, thermoelectric, and mining withdrawals occurred in the Wheeler Lake (06030002; 2,871 MGD), the Pickwick Lake (06030005; 1,333 MGD), and the Guntersville Lake (06030001; 1,054 MGD) subbasins, with the Wheeler Lake subbasin accounting for 32 percent of the total industrial, thermoelectric, and mining withdrawals (figure 32).

Surface-water withdrawals for the industrial, thermoelectric, and mining sector accounted for 99.5 percent (8,800 MGD) of the total industrial, thermoelectric, and mining sector. Sixty percent (60%) of the surface-water withdrawals for the industrial, thermoelectric, and mining sector occurred in the Wheeler Lake (06030002; 2,871 MGD), the Pickwick Lake (06030005; 1,332 MGD), and the Guntersville Lake (06030001; 1,053 MGD) subbasins, with the Wheeler Lake subbasin accounting for 33 percent of the total industrial, thermoelectric, and mining withdrawals.

Groundwater withdrawals in the industrial, thermoelectric, and mining sector accounted for 0.5 percent of the total industrial, thermoelectric, and mining withdrawals. Forty-three percent (43%) of the groundwater withdrawals for the industrial, thermoelectric, and mining sector occurred in the Lower Tombigbee (03160203; 7 MGD), the Mobile-Tensaw (03160204; 5 MGD), and the Middle Coosa (03150106; 5 MGD) with the Lower Tombigbee subbasin accounting for 18 percent of the groundwater withdrawals for the industrial, thermoelectric, and mining sector in 2010.

Figure 31. Industrial, thermoelectric, and mining withdrawals, 2010, in MGD.

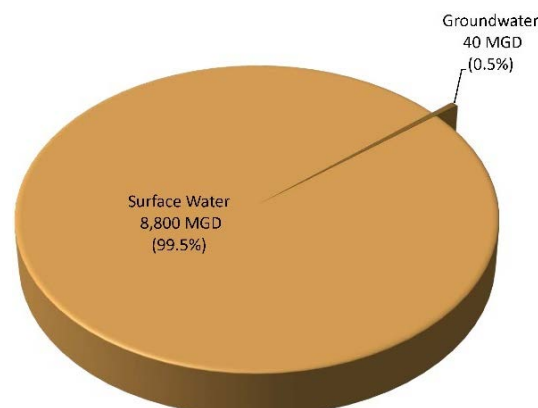


Figure 32. Map of industrial, thermoelectric, and mining total withdrawals, 2010, in MGD.

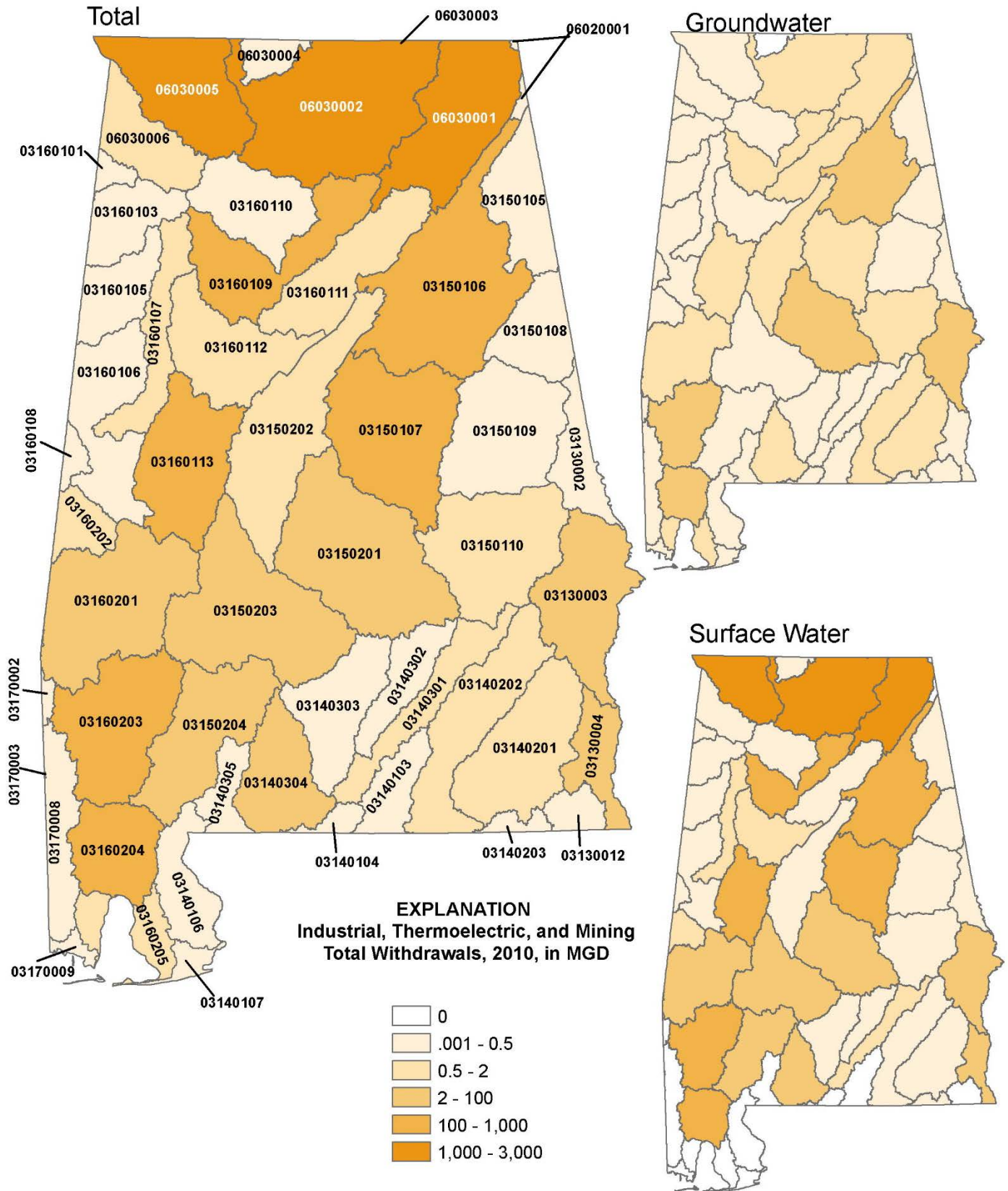


Table 23. Industrial, thermoelectric, and mining groundwater withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03130003	Middle Chattahoochee-W.F. George Res.	2.91	3.02	3.04	3.04	2.97	3.04	3.00	3.03	3.23	3.12	2.85	2.90	3.01
03130004	Lower Chattahoochee	0.47	0.43	0.49	0.42	0.43	0.46	0.46	0.46	0.41	0.41	0.42	0.42	0.44
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.05	0.05	0.07	0.09	0.09	0.10	0.10	0.09	0.08	0.07	0.06	0.05	0.07
03140104	Blackwater	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03140106	Perdido	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03140107	Perdido Bay	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140201	Upper Choctawhatchee	1.69	1.37	1.32	1.51	1.32	1.32	1.51	1.38	1.70	1.39	1.51	1.59	1.47
03140202	Pea	0.99	1.18	1.23	1.22	1.13	1.24	1.21	1.29	1.25	1.21	1.30	1.15	1.20
03140203	Lower Choctawhatchee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140301	Upper Conecuh	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03140302	Patsaliga	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
03140303	Sepulga	0.26	0.28	0.30	0.31	0.31	0.28	0.39	0.33	0.36	0.34	0.40	0.37	0.33
03140304	Lower Conecuh	1.76	1.56	1.56	1.56	1.56	1.56	1.69	1.57	1.58	1.65	1.61	1.58	1.61
03140305	Escambia	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
03150105	Upper Coosa	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03150106	Middle Coosa	4.93	4.84	5.02	5.11	4.93	4.88	4.55	4.74	4.74	4.63	4.64	4.66	4.81
03150107	Lower Coosa	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
03150108	Upper Tallapoosa	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
03150109	Middle Tallapoosa	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
03150110	Lower Tallapoosa	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
03150201	Upper Alabama	3.60	3.46	3.42	3.45	3.71	3.59	3.58	3.65	3.81	3.77	3.79	3.87	3.64
03150202	Cahaba	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
03150203	Middle Alabama	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
03150204	Lower Alabama	0.16	0.18	0.15	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.16	0.16
03160101	Upper Tombigbee	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03160103	Buttahatchee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160105	Luxapallila	0.00	0.03	0.00	0.00	0.00	0.40	0.35	0.29	0.22	0.00	0.00	0.00	0.11
03160106	Middle Tombigbee-Lubbub	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
03160107	Sipsey	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03160108	Noxubee	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
03160109	Mulberry Fork	0.16	0.16	0.16	0.16	0.16	0.16	2.73	0.16	2.73	0.16	0.16	0.16	0.58
03160110	Sipsey Fork	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03160111	Locust Fork	0.93	1.03	0.88	0.86	0.99	0.87	0.84	0.90	1.00	0.86	0.89	0.86	0.91
03160112	Upper Black Warrior	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
03160113	Lower Black Warrior	0.72	0.71	0.70	0.73	0.72	0.77	0.76	0.76	0.76	0.70	0.70	0.70	0.73
03160201	Middle Tombigbee-Chickasaw	0.53	0.54	0.56	0.62	0.62	0.61	0.68	0.63	0.59	0.51	0.42	0.44	0.56
03160202	Sucarnoochee	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
03160203	Lower Tombigbee	6.91	7.68	8.33	7.95	6.62	5.90	7.90	8.07	7.73	8.13	6.67	6.61	7.38
03160204	Mobile-Tensaw	4.82	5.26	5.30	5.01	5.34	4.76	5.78	4.86	4.81	4.91	4.79	4.84	5.04
03160205	Mobile Bay	1.18	1.16	0.87	1.09	1.13	1.11	1.11	1.14	1.14	1.14	1.14	1.12	1.11
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
03170009	Mississippi Coastal	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	0.36	1.33	1.33	0.40	0.40	0.27	0.44	0.42	0.45	0.45	0.40	0.35	0.55
06030002	Wheeler Lake	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030005	Pickwick Lake	0.24	0.24	0.24	0.26	0.26	0.26	0.26	0.26	0.26	0.24	0.24	0.24	0.25
06030006	Bear	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25

Table 24. Industrial, thermoelectric, and mining surface-water withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03130003	Middle Chattahoochee-W.F. George Res.	28.36	29.30	29.08	27.53	27.01	28.37	27.26	26.36	26.86	28.36	28.37	27.66	27.88
03130004	Lower Chattahoochee	69.63	71.79	63.73	62.05	76.30	107.91	118.37	125.69	119.43	92.75	81.03	81.68	89.30
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
03140202	Pea	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03140203	Lower Choctawhatchee	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03140301	Upper Conecuh	1.52	1.46	1.01	1.25	1.75	2.49	2.47	2.55	1.40	1.66	1.45	1.90	1.75
03140302	Patsaliga	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03140303	Sepulga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140304	Lower Conecuh	32.40	27.10	34.60	34.50	35.00	35.80	35.70	35.60	33.00	33.10	33.50	33.00	33.61
03140305	Escambia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150105	Upper Coosa	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03150106	Middle Coosa	115.12	148.55	134.54	138.33	140.54	178.71	199.70	213.06	132.25	141.23	142.86	153.34	153.27
03150107	Lower Coosa	702.48	544.98	566.32	508.01	633.96	882.57	875.59	556.87	657.99	517.81	687.27	854.70	666.51
03150108	Upper Tallapoosa	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03150109	Middle Tallapoosa	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03150110	Lower Tallapoosa	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
03150201	Upper Alabama	65.60	65.44	64.60	66.68	65.47	76.73	78.25	80.18	73.41	68.97	65.61	65.10	69.68
03150202	Cahaba	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
03150203	Middle Alabama	18.59	19.41	19.22	18.38	18.70	18.89	18.85	19.68	18.64	15.73	17.10	18.04	18.44
03150204	Lower Alabama	44.57	46.67	33.47	47.19	43.89	48.59	51.22	54.42	53.42	47.52	43.92	42.32	46.43
03160101	Upper Tombigbee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160103	Buttahatchee	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03160105	Luxapallia	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
03160106	Middle Tombigbee-Lubbub	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03160107	Sipsey	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
03160108	Noxubee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03160109	Mulberry Fork	907.94	1,016.60	1,036.42	986.42	790.81	1,071.79	1,056.73	1,065.57	1,019.86	619.19	590.99	938.31	924.38
03160110	Sipsey Fork	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03160111	Locust Fork	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
03160112	Upper Black Warrior	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
03160113	Lower Black Warrior	413.43	407.40	365.87	264.36	415.62	409.72	410.98	411.81	285.26	298.31	207.82	378.88	356.07
03160201	Middle Tombigbee-Chickasaw	62.17	62.32	53.24	60.41	64.24	63.33	58.62	55.07	58.25	61.72	62.80	62.31	60.37
03160202	Sucamoochee	1.23	1.23	1.23	1.23	1.23	1.30	1.30	1.30	1.30	1.30	1.23	1.23	1.26
03160203	Lower Tombigbee	103.14	102.04	102.67	104.37	104.12	103.73	103.50	103.06	98.52	95.44	83.61	103.03	100.62
03160204	Mobile-Tensaw	993.33	1,153.54	1,046.56	905.60	874.30	1,127.33	1,131.33	1,168.09	901.04	651.33	974.59	967.01	989.99
03160205	Mobile Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170009	Mississippi Coastal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	1,330.82	1,201.49	1,053.20	1,038.60	911.70	1,266.36	1,023.86	1,271.96	1,075.46	1,001.23	685.31	790.36	1,053.40
06030002	Wheeler Lake	3,037.16	2,903.73	2,000.96	3,054.54	3,079.42	3,083.36	2,983.13	2,714.37	3,071.65	2,846.47	2,643.64	3,044.67	2,870.67
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
06030005	Pickwick Lake	1,390.69	1,381.83	1,377.53	1,379.34	1,353.98	1,397.77	1,400.37	1,388.88	1,394.28	1,385.48	849.38	1,283.59	1,332.31
06030006	Bear	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35

Table 25. Total industrial, thermoelectric, and mining withdrawals, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
03130003	Middle Chattahoochee-W.F. George Res.	31.28	32.32	32.13	30.57	29.98	31.41	30.26	29.39	30.09	31.49	31.22	30.56	30.89
03130004	Lower Chattahoochee	70.10	72.22	64.22	62.47	76.73	108.37	118.83	126.15	119.84	93.16	81.45	82.10	89.74
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.05	0.05	0.07	0.09	0.09	0.10	0.10	0.09	0.08	0.07	0.06	0.05	0.07
03140104	Blackwater	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03140106	Perdido	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03140107	Perdido Bay	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140201	Upper Choctawhatchee	1.75	1.43	1.37	1.57	1.38	1.38	1.57	1.44	1.76	1.44	1.57	1.65	1.53
03140202	Pea	1.01	1.21	1.25	1.25	1.16	1.27	1.23	1.32	1.28	1.24	1.33	1.18	1.23
03140203	Lower Choctawhatchee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140301	Upper Conecuh	1.55	1.50	1.05	1.29	1.79	2.53	2.50	2.59	1.43	1.70	1.49	1.93	1.79
03140302	Patsaliga	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
03140303	Sepulga	0.26	0.28	0.30	0.31	0.31	0.29	0.40	0.33	0.37	0.34	0.41	0.37	0.33
03140304	Lower Conecuh	34.16	28.66	36.16	36.06	36.56	37.36	37.39	37.17	34.58	34.75	35.11	34.58	35.21
03140305	Escambia	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
03150105	Upper Coosa	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03150106	Middle Coosa	120.05	153.39	139.56	143.44	145.47	183.59	204.25	217.80	137.00	145.86	147.50	158.00	158.07
03150107	Lower Coosa	703.03	545.53	566.87	508.56	634.50	883.11	876.13	557.41	658.54	518.36	687.82	855.24	667.06
03150108	Upper Tallapoosa	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
03150109	Middle Tallapoosa	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
03150110	Lower Tallapoosa	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
03150201	Upper Alabama	69.20	68.90	68.02	70.13	69.18	80.32	81.83	83.83	77.22	72.74	69.40	68.97	73.32
03150202	Cahaba	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
03150203	Middle Alabama	18.89	19.70	19.51	18.68	18.99	19.18	19.14	19.98	18.94	16.03	17.39	18.33	18.73
03150204	Lower Alabama	44.73	46.85	33.62	47.35	44.05	48.74	51.37	54.58	53.57	47.67	44.07	42.48	46.59
03160101	Upper Tombigbee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03160103	Buttahatchee	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
03160105	Luxapallila	0.28	0.31	0.28	0.28	0.28	0.68	0.63	0.56	0.50	0.28	0.28	0.28	0.39
03160106	Middle Tombigbee-Lubbub	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
03160107	Sipsey	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
03160108	Noxubee	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
03160109	Mulberry Fork	908.09	1,016.76	1,036.58	986.58	790.96	1,071.94	1,059.45	1,065.73	1,022.58	619.35	591.15	938.46	924.97
03160110	Sipsey Fork	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
03160111	Locust Fork	1.28	1.38	1.23	1.21	1.33	1.21	1.19	1.25	1.34	1.20	1.24	1.20	1.25
03160112	Upper Black Warrior	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53
03160113	Lower Black Warrior	414.15	408.11	366.57	265.09	416.34	410.49	411.74	412.57	286.02	299.01	208.52	379.58	356.80
03160201	Middle Tombigbee-Chickasaw	62.70	62.86	53.80	61.03	64.85	63.93	59.30	55.70	58.84	62.23	63.22	62.75	60.93
03160202	Sucarnoochee	1.56	1.56	1.56	1.56	1.56	1.63	1.63	1.63	1.63	1.63	1.56	1.56	1.59
03160203	Lower Tombigbee	110.05	109.72	111.00	112.32	110.74	109.63	111.40	111.14	106.25	103.57	90.28	109.64	107.99
03160204	Mobile-Tensaw	998.15	1,158.80	1,051.85	910.61	879.64	1,132.09	1,137.12	1,172.95	905.85	656.23	979.38	971.85	995.03
03160205	Mobile Bay	1.18	1.16	0.87	1.09	1.13	1.11	1.11	1.14	1.14	1.14	1.14	1.12	1.11
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
03170009	Mississippi Coastal	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
06020001	Middle Tennessee-Chickamauga	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
06030001	Guntersville Lake	1,331.18	1,202.82	1,054.53	1,039.00	912.10	1,266.63	1,024.30	1,272.38	1,075.91	1,001.69	685.71	790.71	1,053.95
06030002	Wheeler Lake	3,037.78	2,904.35	2,001.58	3,055.16	3,080.04	3,083.98	2,983.75	2,714.99	3,072.27	2,847.09	2,644.27	3,045.30	2,871.29
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
06030005	Pickwick Lake	1,390.94	1,382.07	1,377.77	1,379.61	1,354.25	1,398.03	1,400.63	1,389.14	1,394.55	1,385.72	849.63	1,283.84	1,332.56
06030006	Bear	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60

Industrial, Thermoelectric, and Mining Withdrawals – 2040

Industrial, thermoelectric, and mining withdrawals were derived from the Troy University CWRE report. Industrial, thermoelectric, and mining withdrawals for 2040 are estimated to be 8,899 MGD. Estimates of withdrawal by source indicate that the total industrial, thermoelectric, and mining surface-water withdrawals for 2040 are approximately 99 percent (8,847 MGD), with the remaining 1 percent from groundwater (52 MGD) (figure 33).

Total industrial, thermoelectric, and mining withdrawals for 2040 are listed in tables 26, 27, and 28. For 2040, the industrial, thermoelectric, and mining sector accounts for 86 percent (8,899 MGD) of total withdrawals. The subbasins with the highest industrial, thermoelectric, and mining withdrawals for 2040 are the Wheeler Lake (06030002; 3,379 MGD), the Mobile-Tensaw (03160204; 1,548 MGD), the Mulberry Fork (03160109; 1,435 MGD), and the Lower Coosa (03150107; 1,030 MGD) subbasins. These subbasins account for 83 percent of the total industrial, thermoelectric, and mining withdrawals for 2040 (figure 34).

Surface-water withdrawals for the industrial, thermoelectric, and mining sector account for 99 percent of the total industrial, thermoelectric, and mining withdrawals for 2040. Eighty-three percent (83%) of the surface-water withdrawals for industrial, thermoelectric, and mining withdrawals for 2040 occur in the Wheeler Lake (06030002; 3,378 MGD), the Mobile-Tensaw (03160204; 1,540 MGD), the Mulberry Fork (03160109; 1,435 MGD), and the Lower Coosa (03150107; 1,029 MGD) subbasins, with the Wheeler Lake subbasin accounting for 38 percent of the total surface-water withdrawals for industrial, thermoelectric, and mining in 2040.

Groundwater withdrawals for the industrial, thermoelectric, and mining sector account for 1 percent of the total industrial, thermoelectric, and mining withdrawals for 2040. Forty-three percent (43%) of the groundwater withdrawals for industrial, thermoelectric, and mining occur in the Lower Tombigbee (03160203; 10 MGD), the Mobile-Tensaw (03160204; 8 MGD), and the Middle Coosa (03150106; 4 MGD) subbasins, with the Lower Tombigbee subbasin accounting for 19 percent of the groundwater withdrawals for the industrial, thermoelectric, and mining sector.

Figure 33. Industrial, thermoelectric, and mining withdrawals by source, 2040, in MGD.

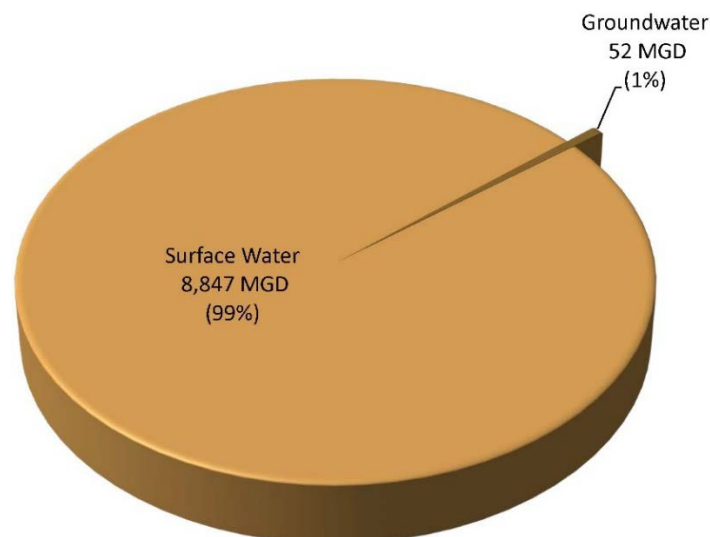


Figure 34. Map of industrial, thermoelectric, and mining total withdrawals, 2040, in MGD.

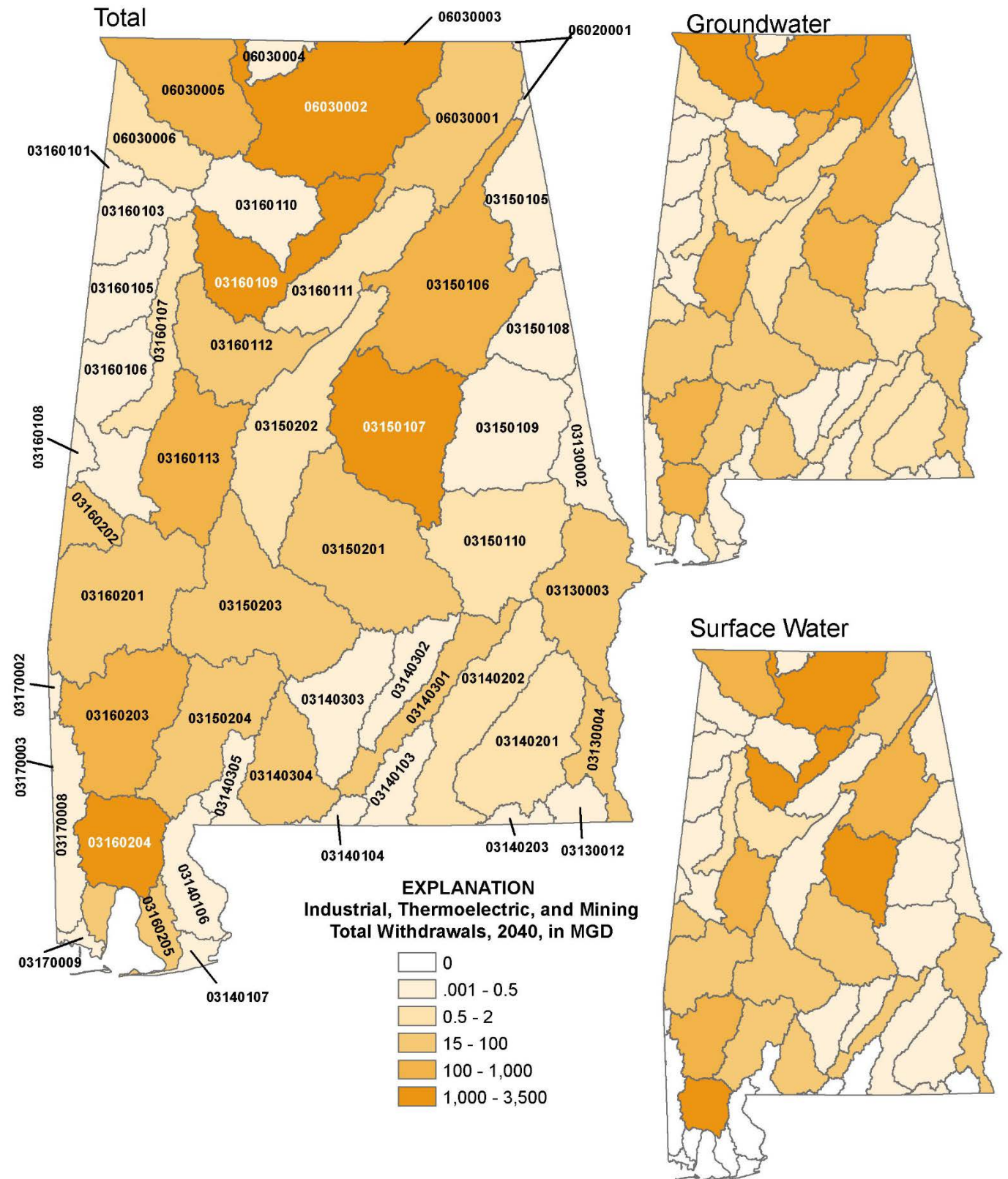


Table 26. Industrial, thermoelectric, and mining groundwater withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03130003	Middle Chattahoochee-W.F. George Res.	3.08	3.19	3.22	3.21	3.13	3.21	3.17	3.20	3.41	3.30	3.01	3.06	3.18
03130004	Lower Chattahoochee	0.46	0.42	0.47	0.41	0.42	0.44	0.45	0.44	0.40	0.40	0.41	0.41	0.43
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140104	Blackwater	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03140106	Perdido	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03140107	Perdido Bay	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140201	Upper Choctawhatchee	1.86	1.51	1.44	1.66	1.45	1.45	1.66	1.52	1.87	1.52	1.66	1.74	1.61
03140202	Pea	0.84	1.01	1.05	1.04	0.97	1.06	1.03	1.10	1.07	1.04	1.11	0.98	1.02
03140203	Lower Choctawhatchee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140301	Upper Conecuh	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03140302	Patsaliga	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
03140303	Sepulga	0.18	0.19	0.21	0.22	0.21	0.20	0.27	0.23	0.25	0.24	0.28	0.26	0.23
03140304	Lower Conecuh	2.54	2.54	2.54	2.54	2.54	2.76	2.54	2.57	2.69	2.62	2.56	2.62	2.59
03140305	Escambia	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
03150105	Upper Coosa	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03150106	Middle Coosa	4.77	4.56	4.75	4.85	4.63	4.52	4.06	4.37	4.40	4.23	4.15	4.18	4.45
03150107	Lower Coosa	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
03150108	Upper Tallapoosa	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
03150109	Middle Tallapoosa	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
03150110	Lower Tallapoosa	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
03150201	Upper Alabama	4.03	3.86	3.78	3.79	4.06	3.95	3.97	4.02	4.22	4.14	4.20	4.34	4.03
03150202	Cahaba	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34
03150203	Middle Alabama	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
03150204	Lower Alabama	0.22	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.19	0.20	0.19
03160101	Upper Tombigbee	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03160103	Buttahatchee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160105	Luxapallila	0.00	0.05	0.01	0.01	0.01	0.60	0.52	0.43	0.33	0.00	0.00	0.01	0.16
03160106	Middle Tombigbee-Lubbub	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
03160107	Sipsey	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03160108	Noxubee	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
03160109	Mulberry Fork	0.16	0.16	0.16	0.16	0.16	0.16	4.14	0.16	4.14	0.16	0.16	0.16	0.82
03160110	Sipsey Fork	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03160111	Locust Fork	0.99	1.11	0.93	0.91	1.05	0.91	0.89	0.95	1.07	0.91	0.95	0.90	0.96
03160112	Upper Black Warrior	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
03160113	Lower Black Warrior	1.04	1.02	1.00	1.05	1.04	1.12	1.10	1.10	1.10	1.00	1.00	1.01	1.05
03160201	Middle Tombigbee-Chickasaw	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
03160202	Sucarnoochee	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
03160203	Lower Tombigbee	9.61	10.69	11.61	11.08	9.20	8.19	11.01	11.25	10.77	11.33	9.28	9.19	10.27
03160204	Mobile-Tensaw	7.43	8.11	8.17	7.73	8.24	7.34	8.93	7.50	7.41	7.57	7.39	7.46	7.77
03160205	Mobile Bay	5.33	4.42	3.35	4.18	4.51	4.40	4.21	4.31	4.59	4.46	4.28	4.44	4.37
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
03170009	Mississippi Coastal	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
06030002	Wheeler Lake	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030005	Pickwick Lake	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
06030006	Bear	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25

Table 27. Industrial, thermoelectric, and mining surface-water withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03130003	Middle Chattahoochee-W.F. George Res.	30.28	31.29	31.05	29.40	28.84	30.29	29.11	28.15	28.68	30.28	30.29	29.54	29.77
03130004	Lower Chattahoochee	67.63	69.73	61.90	60.27	74.11	104.82	114.98	122.09	116.01	90.09	78.71	79.34	86.64
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
03140202	Pea	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03140203	Lower Choctawhatchee	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03140301	Upper Conecuh	2.33	2.25	1.56	1.93	2.70	3.84	3.81	3.94	2.15	2.56	2.24	2.92	2.69
03140302	Patsaliga	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03140303	Sepulga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140304	Lower Conecuh	46.80	59.76	59.59	60.45	61.83	61.66	61.48	56.99	57.17	57.86	56.99	58.13	58.23
03140305	Escambia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150105	Upper Coosa	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03150106	Middle Coosa	165.36	215.62	198.98	196.18	206.11	250.72	285.47	306.48	193.13	199.47	203.17	222.41	220.26
03150107	Lower Coosa	1,085.99	842.47	875.47	785.32	980.04	1,364.43	1,353.64	860.85	1,017.20	800.46	1,062.48	1,321.34	1,029.14
03150108	Upper Tallapoosa	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03150109	Middle Tallapoosa	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03150110	Lower Tallapoosa	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
03150201	Upper Alabama	74.33	73.33	73.21	77.07	74.87	84.12	82.44	83.46	77.91	76.20	73.83	72.30	76.92
03150202	Cahaba	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
03150203	Middle Alabama	13.70	14.30	14.16	13.54	13.78	13.92	13.89	14.50	13.74	11.60	12.60	13.29	13.58
03150204	Lower Alabama	56.66	59.33	42.55	59.99	55.79	61.77	65.11	69.18	67.91	60.40	55.83	53.79	59.02
03160101	Upper Tombigbee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160103	Buttahatchee	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03160105	Luxapallila	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
03160106	Middle Tombigbee-Lubbub	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03160107	Sipsey	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
03160108	Noxubee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03160109	Mulberry Fork	1,407.62	1,576.44	1,607.50	1,529.65	1,226.35	1,662.18	1,638.84	1,652.52	1,581.54	959.88	916.31	1,455.16	1,434.50
03160110	Sipsey Fork	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03160111	Locust Fork	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
03160112	Upper Black Warrior	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
03160113	Lower Black Warrior	639.61	631.22	566.40	409.12	643.49	634.46	636.35	637.46	441.45	461.91	321.59	586.57	550.80
03160201	Middle Tombigbee-Chickasaw	49.78	39.27	48.65	51.60	49.02	47.71	44.29	45.70	46.51	48.63	50.41	50.91	47.71
03160202	Sucarnoochee	2.52	2.52	2.52	2.52	2.52	2.68	2.68	2.68	2.68	2.68	2.68	2.52	2.60
03160203	Lower Tombigbee	145.32	143.77	144.66	147.05	146.70	146.15	145.82	145.21	138.81	134.46	117.80	145.16	141.74
03160204	Mobile-Tensaw	1,543.30	1,792.21	1,625.99	1,406.99	1,358.36	1,751.49	1,757.71	1,814.81	1,399.91	1,011.94	1,514.18	1,502.40	1,539.94
03160205	Mobile Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170009	Mississippi Coastal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	9.98	9.51	8.97	9.30	9.63	9.59	10.57	10.35	10.25	9.89	9.75	10.13	9.83
06030002	Wheeler Lake	3,573.01	3,415.02	2,351.41	3,590.70	3,621.81	3,628.65	3,510.62	3,194.38	3,614.52	3,348.57	3,109.48	3,583.05	3,378.43
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
06030005	Pickwick Lake	137.38	135.38	148.56	168.95	175.05	169.94	171.32	142.42	173.43	176.19	171.35	164.90	161.24
06030006	Bear	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35

Table 28. Total industrial, thermoelectric, and mining withdrawals, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
03130003	Middle Chattahoochee-W.F. George Res.	33.36	34.48	34.27	32.61	31.98	33.50	32.28	31.35	32.09	33.59	33.30	32.60	32.95
03130004	Lower Chattahoochee	68.09	70.15	62.37	60.68	74.53	105.26	115.42	122.53	116.41	90.49	79.11	79.75	87.07
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140104	Blackwater	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03140106	Perdido	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
03140107	Perdido Bay	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140201	Upper Choctawhatchee	1.91	1.57	1.50	1.71	1.51	1.51	1.72	1.58	1.93	1.58	1.72	1.80	1.67
03140202	Pea	0.87	1.04	1.08	1.07	0.99	1.09	1.06	1.13	1.10	1.06	1.14	1.01	1.05
03140203	Lower Choctawhatchee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03140301	Upper Conecuh	2.37	2.29	1.60	1.97	2.73	3.88	3.84	3.97	2.19	2.60	2.27	2.96	2.72
03140302	Patsaliga	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
03140303	Sepulga	0.19	0.20	0.21	0.22	0.22	0.20	0.28	0.23	0.26	0.24	0.28	0.26	0.23
03140304	Lower Conecuh	49.34	62.29	62.12	62.98	64.37	64.41	64.02	59.56	59.86	60.48	59.55	60.75	60.81
03140305	Escambia	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
03150105	Upper Coosa	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03150106	Middle Coosa	170.13	220.18	203.73	201.03	210.73	255.23	289.53	310.84	197.53	203.70	207.32	226.58	224.71
03150107	Lower Coosa	1,086.53	843.02	876.02	785.86	980.59	1,364.97	1,354.18	861.40	1,017.75	801.01	1,063.02	1,321.88	1,029.69
03150108	Upper Tallapoosa	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
03150109	Middle Tallapoosa	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
03150110	Lower Tallapoosa	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
03150201	Upper Alabama	78.35	77.19	76.99	80.86	78.93	88.08	86.41	87.48	82.13	80.34	78.02	76.64	80.95
03150202	Cahaba	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
03150203	Middle Alabama	13.99	14.59	14.45	13.84	14.07	14.21	14.18	14.79	14.03	11.89	12.89	13.59	13.88
03150204	Lower Alabama	56.88	59.52	42.73	60.17	55.98	61.95	65.29	69.36	68.09	60.58	56.01	54.00	59.21
03160101	Upper Tombigbee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03160103	Buttahatchee	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
03160105	Luxapallila	0.28	0.33	0.28	0.28	0.28	0.88	0.80	0.70	0.61	0.28	0.28	0.28	0.44
03160106	Middle Tombigbee-Lubbub	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
03160107	Sipsey	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
03160108	Noxubee	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
03160109	Mulberry Fork	1,407.78	1,576.59	1,607.66	1,529.80	1,226.50	1,662.34	1,642.98	1,652.68	1,585.68	960.04	916.47	1,455.32	1,435.32
03160110	Sipsey Fork	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
03160111	Locust Fork	1.33	1.46	1.28	1.26	1.40	1.26	1.23	1.30	1.41	1.25	1.29	1.25	1.31
03160112	Upper Black Warrior	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82
03160113	Lower Black Warrior	640.64	632.24	567.40	410.17	644.53	635.57	637.45	638.56	442.55	462.91	322.60	587.58	551.85
03160201	Middle Tombigbee-Chickasaw	50.14	39.63	49.01	51.96	49.38	48.07	44.65	46.06	46.87	48.99	50.77	51.27	48.07
03160202	Sucarnoochee	2.85	2.85	2.85	2.85	2.85	3.01	3.01	3.01	3.01	3.01	3.01	2.85	2.93
03160203	Lower Tombigbee	154.93	154.47	156.28	158.13	155.91	154.34	156.83	156.46	149.58	145.80	127.07	154.35	152.01
03160204	Mobile-Tensaw	1,550.73	1,800.33	1,634.16	1,414.72	1,366.60	1,758.83	1,766.63	1,822.31	1,407.32	1,019.51	1,521.56	1,509.86	1,547.71
03160205	Mobile Bay	5.33	4.42	3.35	4.18	4.51	4.40	4.21	4.31	4.59	4.46	4.28	4.44	4.37
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
03170009	Mississippi Coastal	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
06020001	Middle Tennessee-Chickamauga	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
06030001	Guntersville Lake	10.15	9.67	9.14	9.47	9.80	9.76	10.74	10.52	10.41	10.05	9.91	10.30	9.99
06030002	Wheeler Lake	3,573.63	3,415.64	2,352.03	3,591.32	3,622.43	3,629.28	3,511.24	3,195.00	3,615.14	3,349.19	3,110.11	3,583.68	3,379.06
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
06030005	Pickwick Lake	137.45	135.45	148.63	169.02	175.12	170.01	171.39	142.49	173.50	176.26	171.42	164.96	161.31
06030006	Bear	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60

Industrial, Thermoelectric, and Mining Withdrawals Comparing 2010 to 2040

The comparison of groundwater, surface-water, and total industrial, thermoelectric, and mining withdrawals from 2010 to 2040 is shown in table 29. Total industrial, thermoelectric, and mining withdrawals increase from 8,840 MGD in 2010 to 8,899 MGD in 2040, an increase of 59 MGD (0.7%) (figure 35). The Mobile-Tensaw (03160204; 553 MGD), the Mulberry Fork (03160109; 510 MGD), the Wheeler Lake (06030002; 508 MGD), and the Lower Coosa (03150107; 363 MGD) subbasins have the largest increases in industrial, thermoelectric, and mining withdrawals from 2010 to 2040. The Pickwick Lake (06030005; -1,171 MGD) and the Guntersville Lake (06030001; -1,044 MGD) subbasins have the largest decreases in withdrawals from 2010 to 2040. These decreases are primarily due to the closure of the Widows Creek and Colbert Fossil coal fired plants operated by TVA (figure 36).

Surface-water withdrawals are estimated to increase from 8,800 MGD in 2010, to 8,847 MGD in 2040, an increase of 47 MGD (0.5%). The Mobile-Tensaw (03160204; 550 MGD), the Mulberry Fork (03160109; 510 MGD), the Wheeler Lake (06030002; 508 MGD), and the Lower Coosa (03150107; 363 MGD) subbasins have the largest increases in industrial, thermoelectric, and mining surface-water withdrawals from 2010 to 2040. The Pickwick Lake (06030005; -1,171 MGD) and the Guntersville Lake (06030001; -1,044 MGD) subbasins have the largest decreases in surface-water withdrawals from 2010 to 2040.

Groundwater withdrawals are estimated to increase from 40 MGD in 2010 to 52 MGD in 2040, an increase of 12 MGD (30%). The Mobile Bay (03160205; 3 MGD), the Lower Tombigbee (03160203; 3 MGD), and the Mobile-Tensaw (03160204; 3 MGD) subbasins have the largest increases in groundwater withdrawals for the industrial, thermoelectric, and mining sector. The Guntersville Lake (06030001; -0.39 MGD) and the Middle Coosa (03150106; -0.35 MGD) subbasins have the largest decreases in groundwater withdrawals from 2010 to 2040.

Figure 35. Comparison of industrial, thermoelectric, and mining withdrawals, 2010 to 2040, in MGD.

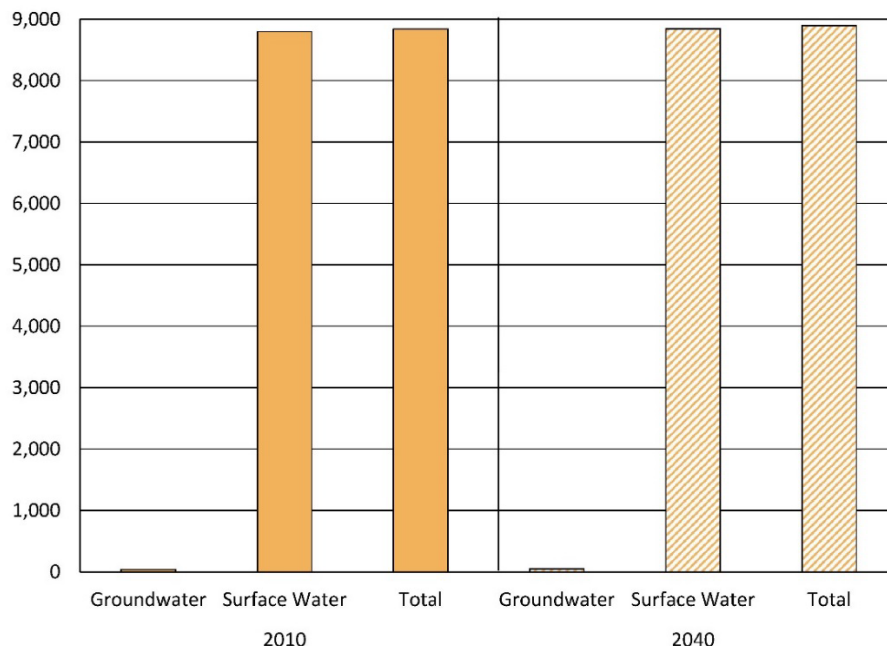


Figure 36. Map of industrial, thermoelectric, and mining withdrawal comparison, 2010 to 2040, in MGD.

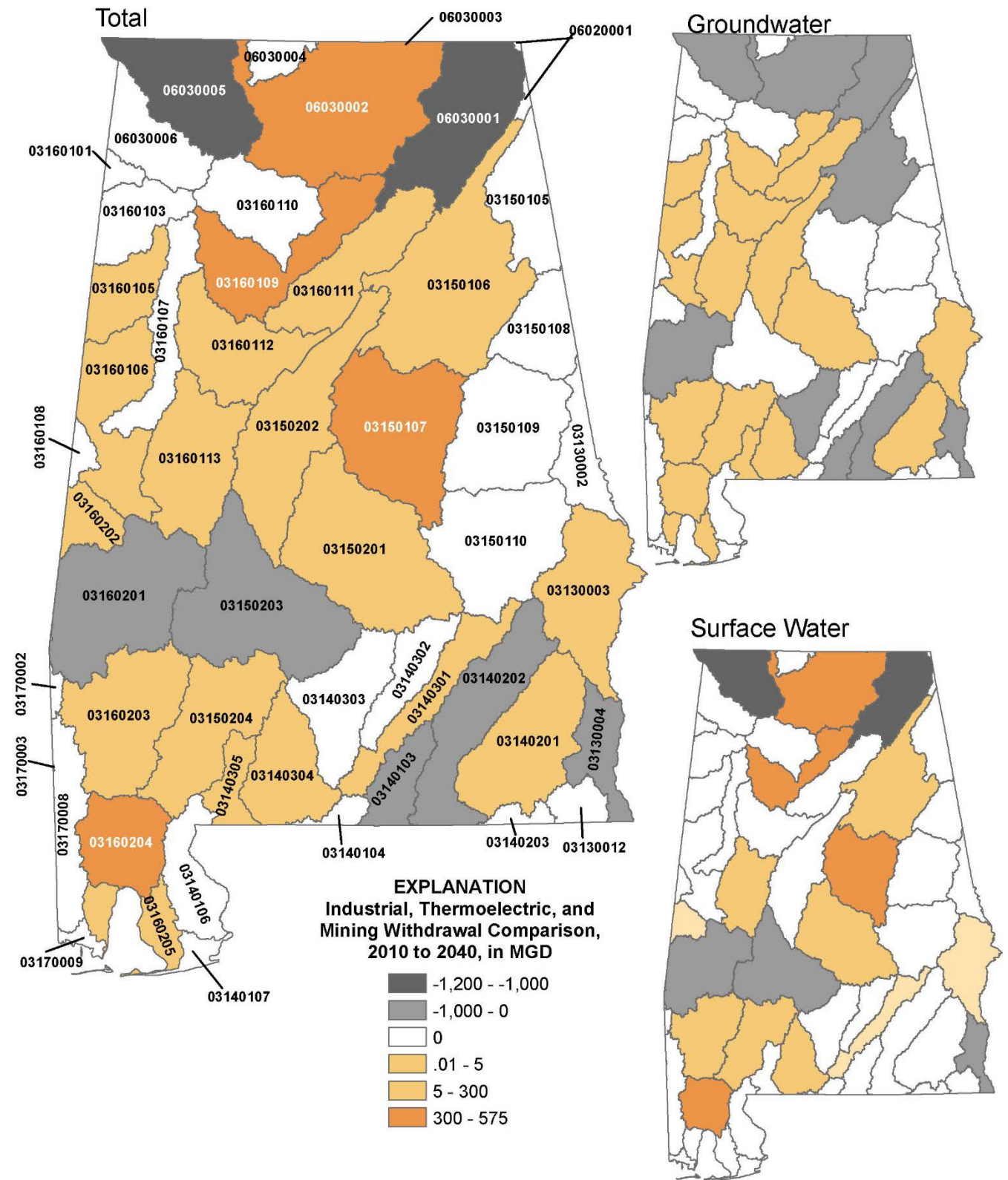


Table 29. Industrial, thermoelectric, and mining withdrawal comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	Groundwater				Surface Water				Total Withdrawals			
		2010 Average	2040 Average	Change in Withdrawal	Percent Change	2010 Average	2040 Average	Change in Withdrawal	Percent Change	2010 Average	2040 Average	Change in Withdrawal	Percent Change
03130002	Middle Chattahoochee-Lake Harding	0.05	0.05	0.00	0%	0.02	0.02	0.00	0%	0.08	0.08	0.00	0%
03130003	Middle Chattahoochee-W.F. George	3.01	3.18	0.17	6%	27.88	29.77	1.89	7%	30.89	32.95	2.06	7%
03130004	Lower Chattahoochee	0.44	0.43	-0.01	-3%	89.30	86.64	-2.66	-3%	89.74	87.07	-2.67	-3%
03130012	Chipola	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
03140103	Yellow	0.07	0.02	-0.05	-69%	0.00	0.00	0.00	0%	0.07	0.02	-0.05	-69%
03140104	Blackwater	0.03	0.03	0.00	0%	0.00	0.00	0.00	0%	0.03	0.03	0.00	0%
03140106	Perdido	0.10	0.10	0.00	0%	0.00	0.00	0.00	0%	0.10	0.10	0.00	0%
03140107	Perdido Bay	0.02	0.02	0.00	0%	0.00	0.00	0.00	0%	0.02	0.02	0.00	0%
03140201	Upper Choctawhatchee	1.47	1.61	0.15	10%	0.06	0.06	0.00	0%	1.53	1.67	0.15	10%
03140202	Pea	1.20	1.02	-0.18	-15%	0.03	0.03	0.00	0%	1.23	1.05	-0.18	-14%
03140203	Lower Choctawhatchee	0.02	0.02	0.00	0%	0.01	0.01	0.00	0%	0.02	0.02	0.00	0%
03140301	Upper Conecuh	0.04	0.04	0.00	0%	1.75	2.69	0.94	53%	1.79	2.72	0.94	52%
03140302	Patsaliga	0.11	0.11	0.00	0%	0.05	0.05	0.00	0%	0.16	0.16	0.00	0%
03140303	Sepulga	0.33	0.23	-0.10	-30%	0.00	0.00	0.00	0%	0.33	0.23	-0.10	-30%
03140304	Lower Conecuh	1.61	2.59	0.98	61%	33.61	58.23	24.62	73%	35.21	60.81	25.60	73%
03140305	Escambia	0.12	0.26	0.14	124%	0.00	0.00	0.00	0%	0.12	0.26	0.14	124%
03150105	Upper Coosa	0.03	0.03	0.00	0%	0.01	0.01	0.00	0%	0.04	0.04	0.00	0%
03150106	Middle Coosa	4.81	4.45	-0.35	-7%	153.27	220.26	66.99	44%	158.07	224.71	66.64	42%
03150107	Lower Coosa	0.55	0.55	0.00	0%	666.51	1,029.14	362.63	54%	667.06	1,029.69	362.63	54%
03150108	Upper Tallapoosa	0.36	0.36	0.00	0%	0.02	0.02	0.00	0%	0.37	0.37	0.00	0%
03150109	Middle Tallapoosa	0.06	0.06	0.00	0%	0.03	0.03	0.00	0%	0.09	0.09	0.00	0%
03150110	Lower Tallapoosa	0.79	0.79	0.00	0%	0.38	0.38	0.00	0%	1.17	1.17	0.00	0%
03150201	Upper Alabama	3.64	4.03	0.39	11%	69.68	76.92	7.24	10%	73.32	80.95	7.63	10%
03150202	Cahaba	1.10	1.34	0.24	22%	0.26	0.26	0.00	0%	1.36	1.59	0.24	18%
03150203	Middle Alabama	0.29	0.29	0.00	0%	18.44	13.58	-4.85	-26%	18.73	13.88	-4.85	-26%
03150204	Lower Alabama	0.16	0.19	0.03	21%	46.43	59.02	12.59	27%	46.59	59.21	12.62	27%
03160101	Upper Tombigbee	0.03	0.03	0.00	0%	0.02	0.02	0.00	0%	0.05	0.05	0.00	0%
03160103	Buttahatchee	0.02	0.02	0.00	0%	0.04	0.04	0.00	0%	0.06	0.06	0.00	0%
03160105	Luxapallila	0.11	0.16	0.05	48%	0.28	0.28	0.00	0%	0.39	0.44	0.05	14%
03160106	Middle Tombigbee-Lubbub	0.17	0.17	0.00	1%	0.10	0.10	0.00	0%	0.26	0.26	0.00	0%
03160107	Sipsey	0.01	0.01	0.00	0%	0.60	0.60	0.00	0%	0.61	0.61	0.00	0%
03160108	Noxubee	0.11	0.11	0.00	0%	0.05	0.05	0.00	0%	0.16	0.16	0.00	0%
03160109	Mulberry Fork	0.58	0.82	0.24	40%	924.38	1,434.50	510.12	55%	924.97	1,435.32	510.35	55%
03160110	Sipsey Fork	0.10	0.10	0.00	0%	0.03	0.03	0.00	0%	0.14	0.14	0.00	0%
03160111	Locust Fork	0.91	0.96	0.06	6%	0.35	0.35	0.00	0%	1.25	1.31	0.06	4%
03160112	Upper Black Warrior	0.43	2.72	2.29	532%	1.10	1.10	0.00	0%	1.53	3.82	2.29	150%
03160113	Lower Black Warrior	0.73	1.05	0.32	44%	356.07	550.80	194.73	55%	356.80	551.85	195.05	55%
03160201	Middle Tombigbee-Chickasaw	0.56	0.36	-0.20	-36%	60.37	47.71	-12.66	-21%	60.93	48.07	-12.87	-21%
03160202	Sucarnoochee	0.33	0.33	0.00	0%	1.26	2.60	1.34	106%	1.59	2.93	1.34	84%
03160203	Lower Tombigbee	7.38	10.27	2.89	39%	100.62	141.74	41.13	41%	107.99	152.01	44.02	41%
03160204	Mobile-Tensaw	5.04	7.77	2.73	54%	989.99	1,539.94	549.95	56%	995.03	1,547.71	552.69	56%
03160205	Mobile Bay	1.11	4.37	3.26	294%	0.00	0.00	0.00	0%	1.11	4.37	3.26	294%
03170002	Upper Chickasawhay	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
03170008	Escatawpa	0.07	0.07	0.00	0%	0.00	0.00	0.00	0%	0.07	0.07	0.00	0%
03170009	Mississippi Coastal	0.03	0.03	0.00	-4%	0.00	0.00	0.00	0%	0.03	0.03	0.00	-4%
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.01	0.01	0.00	0%
06030001	Guntersville Lake	0.55	0.17	-0.39	-70%	1,053.40	9.83	-1,043.57	-99%	1,053.95	9.99	-1,043.96	-99%
06030002	Wheeler Lake	0.63	0.62	0.00	0%	2,870.67	3,378.43	507.77	18%	2,871.29	3,379.06	507.77	18%
06030003	Elk	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%	0.00	0.00	0.00	0%
06030004	Lower Elk	0.00	0.00	0.00	0%	0.33	0.33	0.00	0%	0.33	0.33	0.00	0%
06030005	Pickwick Lake	0.25	0.07	-0.18	-73%	1,332.31	161.24	-1,171.07	-88%	1,332.56	161.31	-1,171.26	-88%
06030006	Bear	0.25	0.25	0.00	0%	0.35	0.35	0.00	0%	0.60	0.60	0.00	0%

Water Return Data Compilation, Sources of Information, and Methodology

Another part of the OWR's water assessment effort was to develop water return estimates for each subbasin. For the purposes of this report, it was assumed that all agriculture water withdrawals were completely consumptive and that no returns occurred. While in the purest sense of the hydrological cycle for irrigation, there is some small return of water in this sector, several factors were used in the assumption to consider this water use sector as 100% consumptive. These include: the inability to quantify the amount of returning water; the variation of the return based on crop type and soil conditions, and the fact there is a significant lag time from the application of water until the seepage of any water drains down to a groundwater source where it can be reused.

2010 Water Returns

For 2010, a total of 517 NPDES permitted discharge sites were compiled for the public supply sector, 175 NPDES permitted discharge sites were compiled for the industrial sector, and 21 NPDES permitted discharge sites were compiled for the thermoelectric power sector. The NPDES data was compiled from EPA's DMR Pollutant Loading Tool website, OWR's eWater data management application, and ADEM's online eFile system. Monthly and annual water return estimates were summarized for each subbasin for the three subsectors for 2010.

Some monthly return data was missing and had to be estimated. The annual average was used as a replacement for any missing months for a given permit. While some dewatering returns were reported, no mining process return data was available for 2010, therefore, it was not included in the industrial, thermoelectric, and mining return dataset.

2040 Water Returns

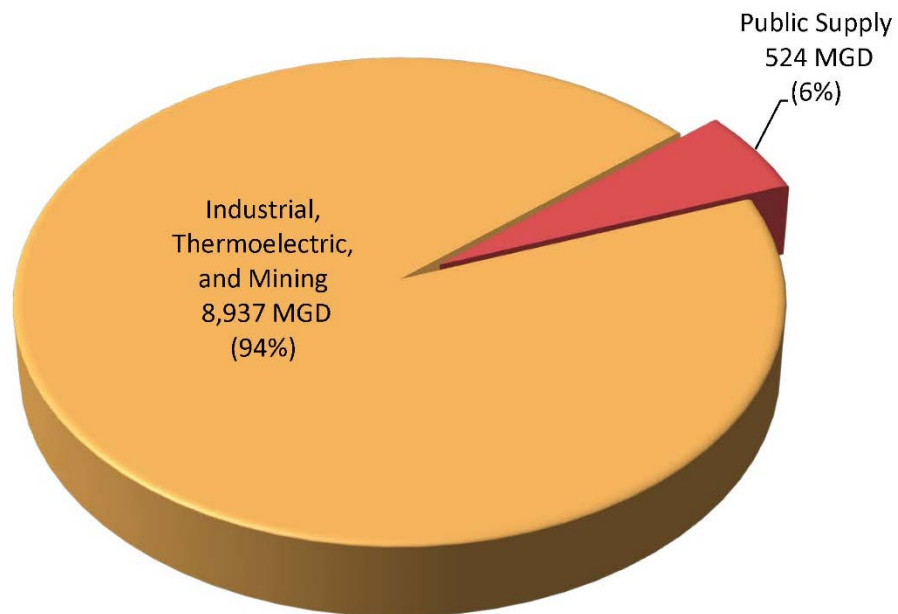
Water returns for 2040 were determined using the 2010 values as a baseline. For both the 2040 public-supply returns and the industrial, thermoelectric, and mining returns, the ratio of 2010 withdrawals to 2010 returns was calculated and applied to the 2040 withdrawals to estimate 2040 returns. This calculation was performed on a monthly scale to produce a monthly 2040 return dataset for each subbasin. Some minor exceptions were made to this methodology due to known closings of some industrial facilities to be accounted for in the 2040 projections. For example, a U.S. Steel facility in Birmingham closed in 2014 and the analysis was modified to exclude the return in the 2040 calculations.

Water Return Summaries

2010 Total Returns (All Sectors)

Total Alabama statewide returns for 2010 were estimated to be 9,461 MGD. Estimates of returns by sector indicate that the industrial, thermoelectric, and mining sector accounted for approximately 94 percent (8,937 MGD) of the total returns for 2010, with the public supply sector accounting for the remaining 6 percent (524 MGD) (figure 37).

Figure 37. Total returns by sector, 2010, in MGD.



Total returns for 2010 are listed in table 30. Sixty-eight percent (68%) of the total returns for 2010 occurred in the Wheeler Lake (06030002; 2,943 MGD), the Pickwick Lake (06030005; 1,350 MGD), the Guntersville Lake (06030001; 1,103 MGD), and the Mobile-Tensaw (03160204; 1,049 MGD) subbasins, with the Wheeler Lake subbasin accounting for 31 percent of the total 2010 returns (figure 38).

Figure 38. Map of total returns, 2010, in MGD.

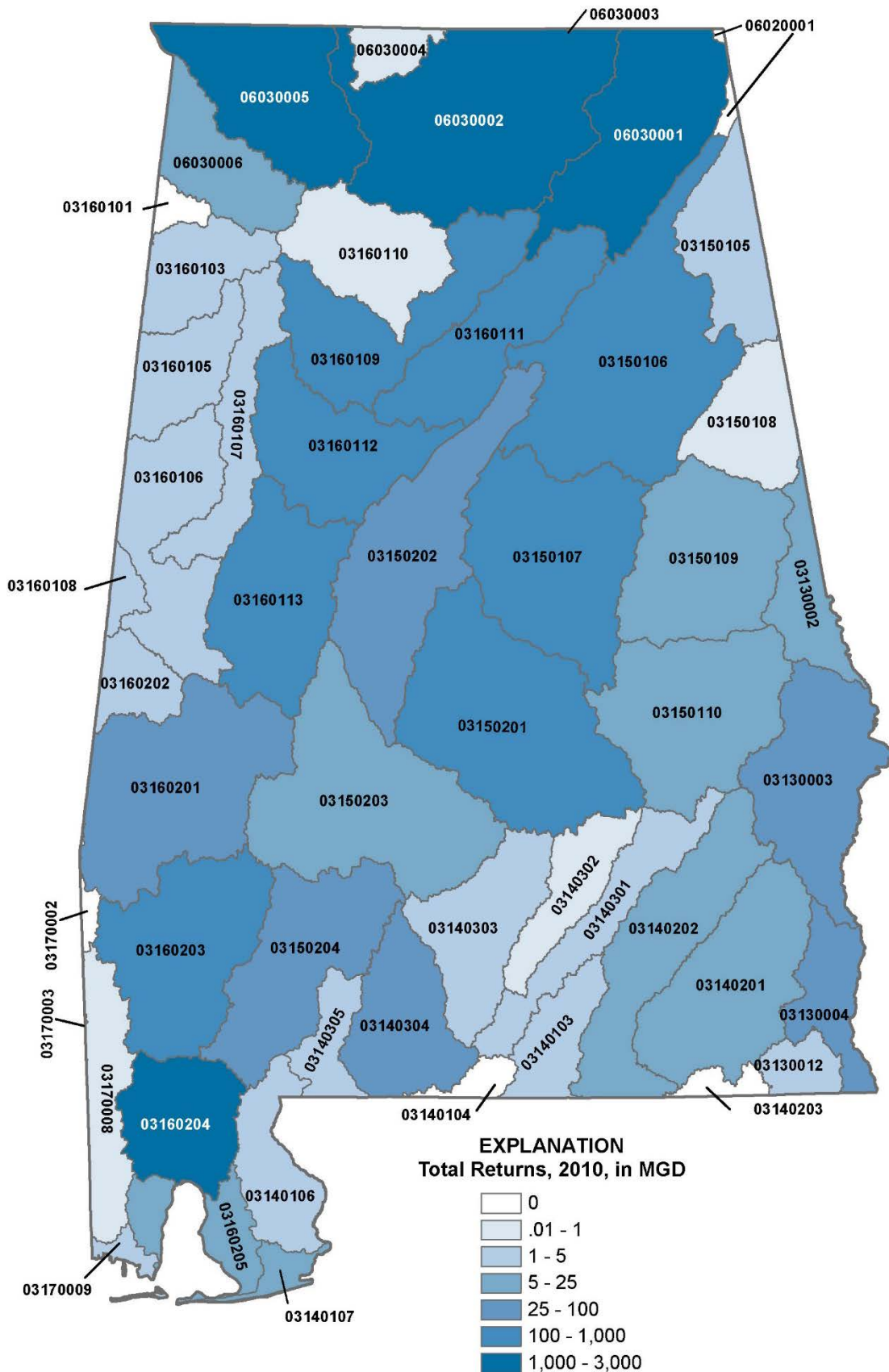


Table 30. Total returns, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	7.82	7.71	8.06	5.74	7.31	5.69	5.71	6.28	5.36	5.12	4.72	4.54	6.17
03130003	Middle Chattahoochee-W.F. George Res.	23.51	25.04	23.88	30.58	32.03	29.47	25.79	25.22	25.35	24.81	29.94	25.41	26.75
03130004	Lower Chattahoochee	82.35	88.20	76.56	71.04	85.16	90.87	96.98	101.09	97.82	82.69	79.93	75.89	85.72
03130012	Chipola	3.13	3.42	1.84	1.27	1.46	1.29	1.19	1.28	1.18	1.07	1.19	1.17	1.62
03140103	Yellow	2.92	3.62	2.28	1.50	1.16	1.30	1.09	0.89	0.93	0.67	0.97	1.01	1.53
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	4.31	4.30	3.30	2.02	2.51	2.13	2.29	2.75	2.00	1.87	2.90	2.08	2.70
03140107	Perdido Bay	5.36	5.64	5.88	5.33	5.62	7.96	8.46	8.12	6.86	6.34	6.25	5.47	6.44
03140201	Upper Choctawhatchee	22.80	25.96	17.56	13.92	15.30	14.62	14.35	14.76	12.85	12.76	13.96	12.61	15.95
03140202	Pea	8.48	7.87	7.79	6.96	6.41	6.36	5.94	6.74	5.98	6.38	6.14	6.51	6.80
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	3.69	3.70	3.10	1.93	1.91	1.64	1.53	1.78	1.44	1.38	1.45	1.88	2.12
03140302	Patsaliga	0.67	0.76	0.71	0.42	0.34	0.31	0.26	0.26	0.27	0.35	0.28	0.32	0.41
03140303	Sepulga	3.30	3.44	3.04	2.16	1.94	1.84	1.51	1.41	1.25	1.21	1.25	1.19	1.96
03140304	Lower Conecuh	29.53	25.27	24.90	38.87	41.78	38.42	37.13	42.43	31.52	31.49	38.01	38.71	34.84
03140305	Escambia	4.83	5.36	4.13	2.73	3.19	2.22	2.28	2.23	1.99	2.15	2.43	2.73	3.02
03150105	Upper Coosa	2.59	2.99	2.91	2.08	1.91	1.49	1.07	1.07	1.51	1.70	1.23	1.40	1.83
03150106	Middle Coosa	174.58	213.50	205.81	180.94	183.25	216.12	247.71	254.52	170.00	169.10	176.57	192.53	198.72
03150107	Lower Coosa	733.72	579.66	599.43	507.06	652.62	897.36	891.01	575.12	673.06	532.06	702.74	869.26	684.43
03150108	Upper Tallapoosa	0.65	0.63	0.64	0.45	0.45	0.37	0.37	0.35	0.30	0.32	0.31	0.34	0.43
03150109	Middle Tallapoosa	9.17	9.20	7.75	5.64	6.04	5.20	5.78	6.26	4.36	4.82	5.08	5.66	6.25
03150110	Lower Tallapoosa	17.63	18.02	16.96	13.34	13.34	12.96	11.50	11.60	10.47	9.81	9.86	9.62	12.93
03150201	Upper Alabama	140.54	141.38	140.18	163.99	125.82	130.42	147.36	135.47	126.43	117.48	116.35	112.19	133.13
03150202	Cahaba	36.34	42.82	37.23	27.48	29.46	27.27	23.74	26.90	22.76	21.92	25.53	28.16	29.13
03150203	Middle Alabama	22.73	25.94	21.62	17.71	18.90	18.21	17.60	17.43	21.90	14.20	16.12	20.23	19.38
03150204	Lower Alabama	48.24	52.16	47.16	45.99	45.65	49.33	51.25	58.62	57.62	54.09	50.38	50.58	50.92
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	2.10	2.23	1.92	1.71	1.98	1.48	0.95	1.04	1.23	1.07	0.94	1.27	1.49
03160105	Luxapallila	1.23	1.39	2.54	1.48	1.87	2.39	2.55	9.27	6.09	0.44	1.37	1.19	2.65
03160106	Middle Tombigbee-Lubbub	1.75	1.92	2.32	1.50	0.90	0.80	0.58	0.68	0.88	0.60	0.94	0.84	1.14
03160107	Sipsey	1.85	1.95	1.45	1.49	2.21	1.50	1.14	1.04	1.05	1.04	1.25	1.20	1.43
03160108	Noxubee	4.34	13.51	11.18	5.47	1.10	1.65	0.00	0.00	0.00	0.00	0.00	0.00	3.10
03160109	Mulberry Fork	866.57	979.26	1,012.18	941.08	763.75	1,018.83	997.59	985.58	959.68	563.66	561.91	904.81	879.57
03160110	Sipsey Fork	0.55	0.53	0.49	0.38	0.39	0.28	0.24	0.26	0.26	0.32	0.41	0.45	0.38
03160111	Locust Fork	153.60	167.70	171.44	105.30	119.82	107.41	89.71	85.06	91.31	76.71	86.23	105.92	113.35
03160112	Upper Black Warrior	182.62	172.27	162.85	149.65	143.16	116.41	115.27	116.48	102.27	109.59	117.81	118.56	133.91
03160113	Lower Black Warrior	419.82	416.07	374.72	269.36	422.28	415.13	417.91	416.78	289.65	303.25	214.08	384.65	361.98
03160201	Middle Tombigbee-Chickasaw	56.45	59.79	42.29	47.07	53.52	48.07	50.27	47.37	46.55	48.37	51.23	46.80	49.81
03160202	Sucarnoochee	1.88	2.01	2.19	1.20	0.80	0.69	1.08	1.16	0.73	0.94	1.69	1.35	1.31
03160203	Lower Tombigbee	114.62	115.84	111.16	112.68	113.76	111.42	117.86	119.32	121.09	127.56	122.42	131.15	118.24
03160204	Mobile-Tensaw	1,079.58	1,231.41	1,113.00	957.47	936.82	1,183.60	1,175.94	1,217.28	946.40	699.31	1,034.03	1,012.24	1,048.92
03160205	Mobile Bay	7.47	7.39	6.42	4.70	5.95	5.72	4.83	5.54	5.08	5.08	5.20	5.77	5.76
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.62	0.67	0.36	0.22	0.45	0.24	0.23	0.32	0.36	0.20	0.48	0.29	0.37
03170009	Mississippi Coastal	1.52	2.25	1.35	1.26	1.24	1.34	1.34	1.50	1.30	1.11	1.03	1.11	1.36
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	1,376.10	1,277.48	1,098.50	1,100.49	994.88	1,313.56	1,065.27	1,313.24	1,117.21	1,042.02	716.81	821.89	1,103.12
06030002	Wheeler Lake	3,136.32	3,006.10	2,101.55	3,116.75	3,151.69	3,150.74	3,038.47	2,769.12	3,129.14	2,896.15	2,704.65	3,111.38	2,942.67
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.14	0.22	0.19	0.15	0.13	0.16	0.47	0.49	0.51	0.52	0.51	0.52	0.33
06030005	Pickwick Lake	1,432.70	1,419.24	1,396.69	1,406.53	1,371.27	1,412.85	1,412.08	1,402.67	1,400.89	1,390.09	857.68	1,294.65	1,349.78
06030006	Bear	8.99	8.72	7.61	7.36	8.07	7.19	6.94	6.11	4.27	4.89	7.25	6.99	7.03

2040 Total Returns (All Sectors)

Total Alabama statewide returns for 2040 are estimated to be 9,523 MGD. Estimates of returns by sector indicate that the industrial, thermoelectric, and mining sector accounts for approximately 94 percent (8,927 MGD) of the total returns for 2040, with the public supply sector accounting for the remaining 6 percent (596 MGD) (figure 39).

Total returns for 2040 are listed in table 31. Seventy-nine percent (79%) of the total returns for 2040 occur in the Wheeler Lake (06030002; 3,473 MGD), the Mobile-Tensaw (03160204; 1,605 MGD), the Mulberry Fork (03160109; 1,359 MGD), and the Lower Coosa (03150107; 1,055 MGD) subbasins, with the Wheeler Lake subbasin accounting for 36 percent of the total returns for 2040 (figure 40).

Figure 39. Total returns by sector, 2040, in MGD.

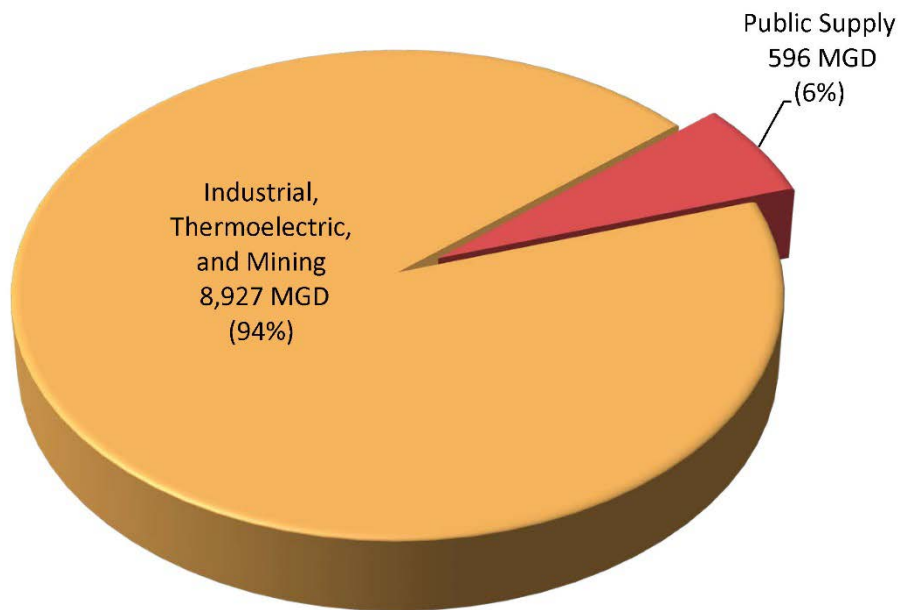


Figure 40. Map of total returns, 2040, in MGD.

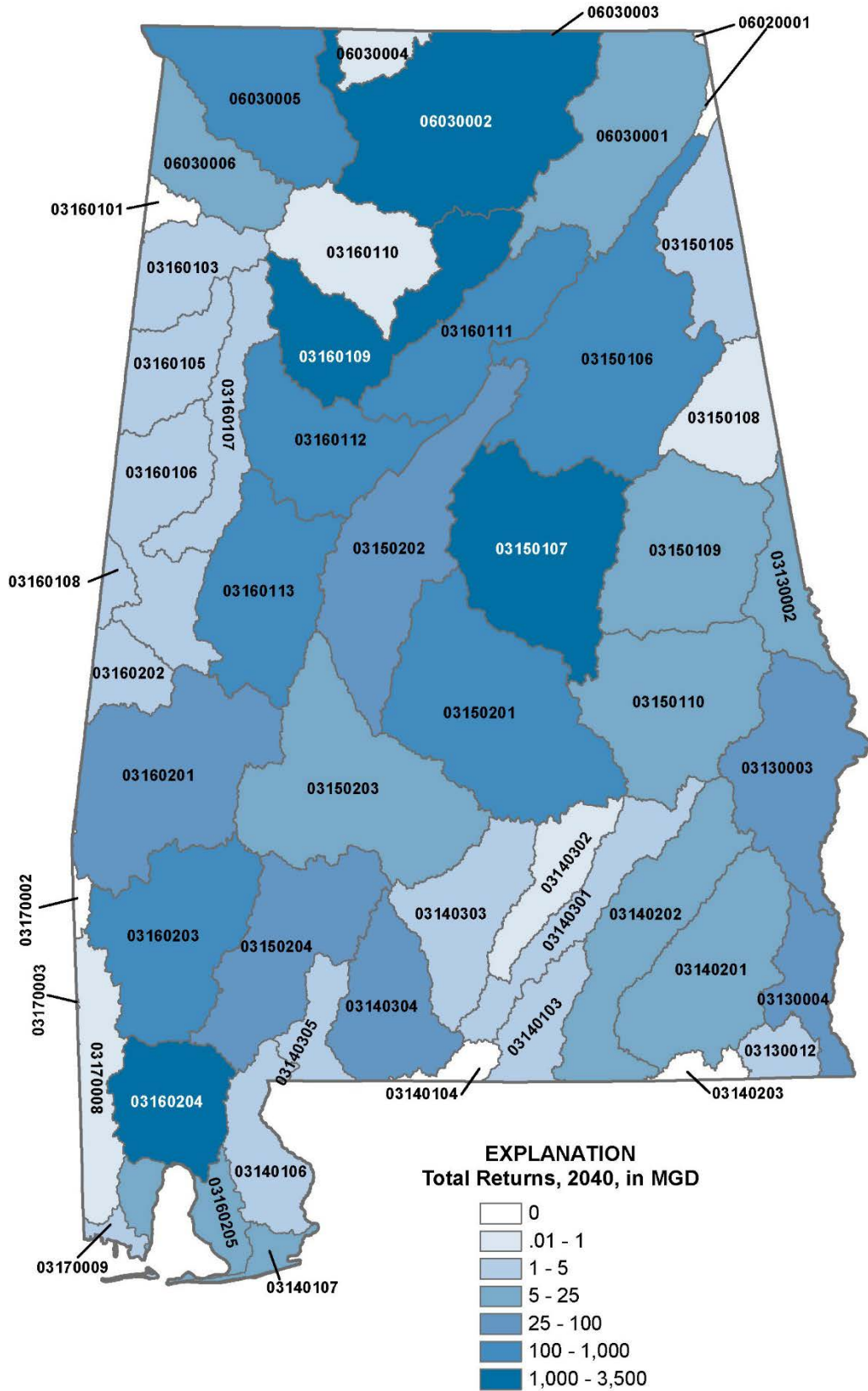


Table 31. Total returns, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	8.86	8.71	9.10	6.44	8.14	6.35	6.29	6.90	5.90	5.62	5.17	5.04	6.88
03130003	Middle Chattahoochee-W.F. George Res.	27.48	29.17	27.74	34.43	36.22	32.95	28.77	28.09	28.16	27.45	32.87	27.96	30.11
03130004	Lower Chattahoochee	81.56	87.39	75.60	70.02	83.61	89.06	94.97	98.96	95.77	81.03	78.34	74.38	84.22
03130012	Chipola	4.11	4.49	2.42	1.67	1.91	1.70	1.56	1.68	1.55	1.41	1.57	1.54	2.13
03140103	Yellow	2.94	3.69	2.25	1.41	1.05	1.19	0.93	0.75	0.76	0.56	0.87	0.94	1.44
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	5.21	5.20	3.97	2.38	2.99	2.51	2.71	3.26	2.36	2.23	3.46	2.49	3.23
03140107	Perdido Bay	9.10	9.58	10.00	9.05	9.55	13.52	14.37	13.80	11.66	10.77	10.62	9.30	10.94
03140201	Upper Choctawhatchee	27.28	31.08	20.93	16.49	18.05	17.23	16.89	17.40	15.11	14.99	16.42	14.83	18.89
03140202	Pea	9.34	8.63	8.57	7.62	7.01	6.94	6.52	7.36	6.57	6.91	6.71	7.08	7.44
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	4.05	4.07	3.41	2.14	2.12	1.86	1.75	2.06	1.64	1.61	1.68	2.14	2.38
03140302	Patsaliga	0.70	0.79	0.75	0.44	0.36	0.33	0.27	0.27	0.28	0.36	0.29	0.34	0.43
03140303	Sepulga	3.06	3.19	2.82	2.00	1.80	1.71	1.40	1.30	1.15	1.11	1.15	1.10	1.82
03140304	Lower Conecuh	40.89	49.77	40.42	66.66	70.97	65.06	62.21	65.66	53.66	53.66	62.70	66.76	58.20
03140305	Escambia	4.62	5.13	3.98	2.68	3.10	2.18	2.24	2.21	2.02	2.16	2.39	2.70	2.95
03150105	Upper Coosa	2.86	3.31	3.22	2.30	2.11	1.65	1.19	1.19	1.67	1.88	1.36	1.55	2.02
03150106	Middle Coosa	231.71	287.08	279.44	242.22	251.44	290.91	342.33	354.80	237.13	229.29	240.63	267.29	271.19
03150107	Lower Coosa	1,130.37	891.58	922.21	781.05	1,006.10	1,384.78	1,375.29	886.94	1,038.56	820.66	1,084.21	1,341.48	1,055.27
03150108	Upper Tallapoosa	0.68	0.65	0.66	0.47	0.47	0.39	0.38	0.37	0.31	0.33	0.32	0.35	0.45
03150109	Middle Tallapoosa	9.06	9.09	7.65	5.57	5.97	5.14	5.71	6.18	4.31	4.76	5.01	5.59	6.17
03150110	Lower Tallapoosa	22.81	23.32	21.94	17.26	17.26	16.77	14.88	15.01	13.54	12.70	12.76	12.44	16.72
03150201	Upper Alabama	158.61	158.49	158.22	187.93	142.81	143.97	158.04	144.27	136.49	130.36	130.74	125.06	147.92
03150202	Cahaba	44.99	52.98	46.01	34.03	36.36	33.78	29.35	33.20	28.18	27.14	31.55	34.78	36.03
03150203	Middle Alabama	16.89	19.26	16.06	13.15	14.04	13.53	13.07	12.95	16.26	10.56	11.98	15.02	14.40
03150204	Lower Alabama	60.83	65.67	59.39	58.03	57.48	62.23	64.66	74.10	72.74	68.29	63.66	64.05	64.26
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	1.86	1.98	1.70	1.52	1.76	1.32	0.84	0.92	1.09	0.95	0.84	1.13	1.33
03160105	Luxapallila	1.07	1.24	2.37	1.35	1.72	2.81	3.03	11.36	7.27	0.39	1.28	1.06	2.91
03160106	Middle Tombigbee-Lubbub	1.68	1.84	2.23	1.45	0.87	0.77	0.57	0.67	0.85	0.59	0.91	0.81	1.10
03160107	Sipsey	1.84	1.93	1.44	1.48	2.19	1.49	1.13	1.03	1.04	1.04	1.24	1.19	1.42
03160108	Noxubee	4.34	13.51	11.18	5.47	1.10	1.65	0.00	0.00	0.00	0.00	0.00	0.00	3.10
03160109	Mulberry Fork	1,336.12	1,509.99	1,561.25	1,453.43	1,177.31	1,575.13	1,543.29	1,524.69	1,484.99	870.67	867.61	1,398.73	1,358.60
03160110	Sipsey Fork	0.56	0.54	0.50	0.38	0.39	0.28	0.25	0.27	0.27	0.32	0.41	0.45	0.38
03160111	Locust Fork	159.51	174.37	177.88	109.22	124.44	111.43	93.03	88.30	95.04	79.56	89.48	109.88	117.68
03160112	Upper Black Warrior	186.17	198.15	167.02	160.36	161.91	138.55	139.35	133.22	108.64	114.59	136.67	132.58	148.10
03160113	Lower Black Warrior	647.43	641.76	577.55	414.72	651.58	641.08	645.22	643.64	446.76	468.05	329.41	593.82	558.42
03160201	Middle Tombigbee-Chickasaw	45.21	38.51	38.23	40.01	40.87	36.25	37.95	39.15	37.10	38.11	41.19	38.25	39.24
03160202	Sucarnoochee	1.60	1.79	1.96	1.10	0.78	0.70	1.11	1.01	0.74	1.22	2.25	1.49	1.31
03160203	Lower Tombigbee	160.47	162.04	155.01	157.67	159.26	155.43	165.12	167.23	169.89	179.07	171.76	184.10	165.59
03160204	Mobile-Tensaw	1,642.84	1,878.55	1,700.64	1,466.66	1,429.77	1,815.00	1,806.77	1,865.34	1,449.70	1,068.38	1,584.29	1,551.61	1,604.96
03160205	Mobile Bay	23.74	19.88	17.14	11.86	16.84	15.43	12.18	14.02	13.71	13.60	13.38	16.34	15.68
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.73	0.80	0.42	0.26	0.53	0.28	0.28	0.38	0.42	0.24	0.57	0.35	0.44
03170009	Mississippi Coastal	1.55	2.25	1.39	1.28	1.27	1.37	1.37	1.53	1.33	1.13	1.05	1.12	1.39
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	28.04	29.65	27.77	23.66	25.85	23.49	19.86	19.89	18.91	19.42	21.33	23.23	23.43
06030002	Wheeler Lake	3,704.76	3,552.42	2,484.18	3,675.67	3,718.29	3,718.47	3,585.22	3,268.10	3,690.72	3,415.48	3,190.83	3,672.21	3,473.03
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.18	0.29	0.26	0.20	0.17	0.22	0.61	0.64	0.67	0.69	0.67	0.69	0.44
06030005	Pickwick Lake	159.09	149.63	144.05	175.79	174.49	153.75	149.13	117.11	150.72	154.63	151.65	143.73	151.98
06030006	Bear	9.11	8.85	7.72	7.44	8.17	7.28	7.01	6.17	4.31	4.94	7.31	7.06	7.11

Total returns comparing 2010 to 2040

The comparison of total returns from 2010 to 2040 is shown in table 32. Total returns increased from 9,461 MGD in 2010 to 9,523 MGD in 2040, an increase of 62 MGD (0.7%). The Mobile-Tensaw (03160204; 556 MGD), the Wheeler Lake (06030002; 530 MGD), the Mulberry Fork (03160109; 479 MGD), the Lower Coosa (03150107; 371 MGD), and the Lower Black Warrior (03160113; 196 MGD) subbasins have the largest increases in total returns from 2010 to 2040. The Pickwick Lake (06030005; -1,198 MGD) and the Guntersville Lake (06030001; -1,080 MGD) subbasins have the largest decreases in returns in 2040, primarily related to the closure of the Widows Creek and Colbert Fossil thermoelectric plants.

Figure 41. Map of total return comparison, 2010 to 2040, in MGD.

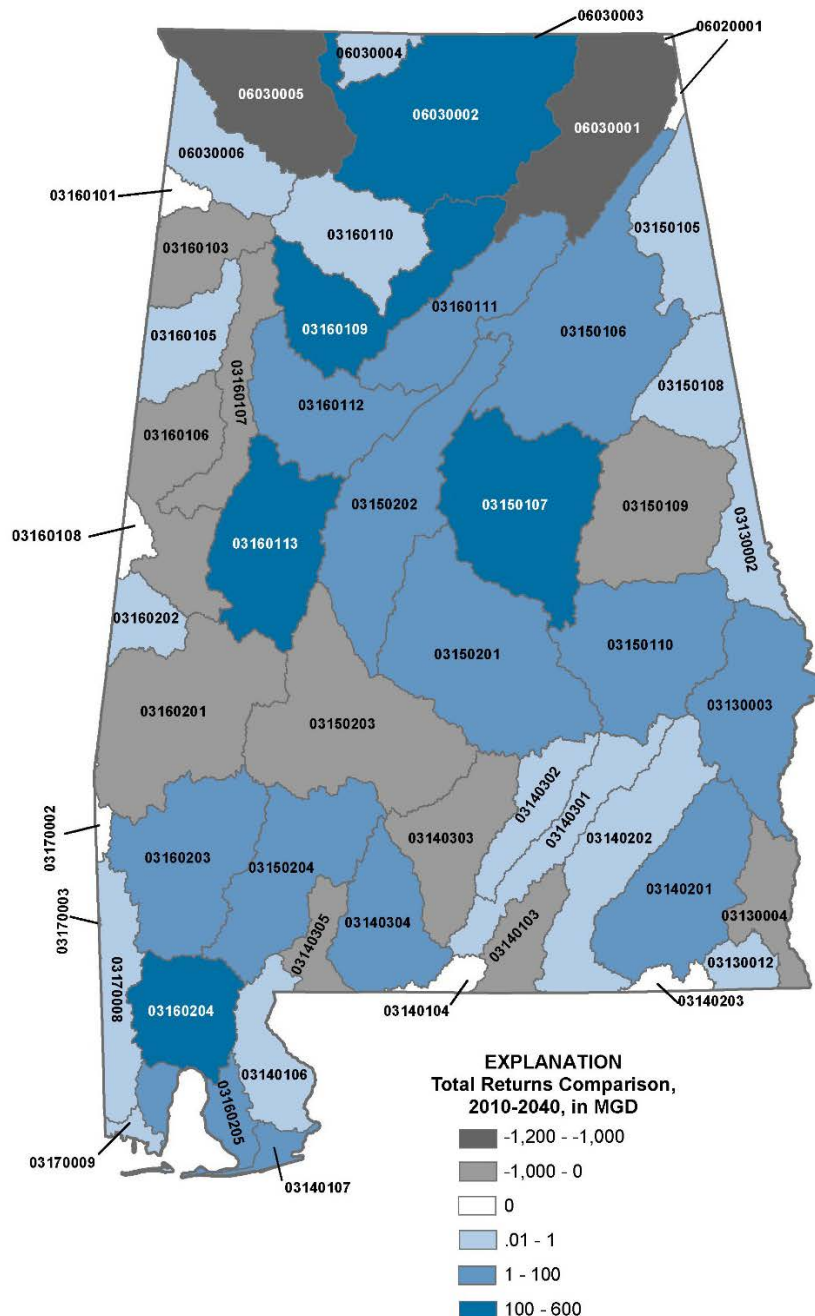


Table 32. Total return comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	2010 Average	2040 Average	Change in Returns	Percent Change
03130002	Middle Chattahoochee-Lake Harding	6.17	6.88	0.71	11%
03130003	Middle Chattahoochee-W.F. George Res.	26.75	30.11	3.35	13%
03130004	Lower Chattahoochee	85.72	84.22	-1.49	-2%
03130012	Chipola	1.62	2.13	0.51	31%
03140103	Yellow	1.53	1.44	-0.09	-6%
03140104	Blackwater	0.00	0.00	0.00	0%
03140106	Perdido	2.70	3.23	0.53	19%
03140107	Perdido Bay	6.44	10.94	4.50	70%
03140201	Upper Choctawhatchee	15.95	18.89	2.94	18%
03140202	Pea	6.80	7.44	0.64	9%
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0%
03140301	Upper Conecuh	2.12	2.38	0.26	12%
03140302	Patsaliga	0.41	0.43	0.02	4%
03140303	Sepulga	1.96	1.82	-0.15	-7%
03140304	Lower Conecuh	34.84	58.20	23.36	67%
03140305	Escambia	3.02	2.95	-0.07	-2%
03150105	Upper Coosa	1.83	2.02	0.19	11%
03150106	Middle Coosa	198.72	271.19	72.47	36%
03150107	Lower Coosa	684.43	1,055.27	370.84	54%
03150108	Upper Tallapoosa	0.43	0.45	0.02	4%
03150109	Middle Tallapoosa	6.25	6.17	-0.08	-1%
03150110	Lower Tallapoosa	12.93	16.72	3.80	29%
03150201	Upper Alabama	133.13	147.92	14.78	11%
03150202	Cahaba	29.13	36.03	6.90	24%
03150203	Middle Alabama	19.38	14.40	-4.99	-26%
03150204	Lower Alabama	50.92	64.26	13.34	26%
03160101	Upper Tombigbee	0.00	0.00	0.00	0%
03160103	Buttahatchee	1.49	1.33	-0.17	-11%
03160105	Luxapallila	2.65	2.91	0.26	10%
03160106	Middle Tombigbee-Lubbub	1.14	1.10	-0.04	-3%
03160107	Sipsey	1.43	1.42	-0.01	-1%
03160108	Noxubee	3.10	3.10	0.00	0%
03160109	Mulberry Fork	879.57	1,358.60	479.03	54%
03160110	Sipsey Fork	0.38	0.38	0.00	1%
03160111	Locust Fork	113.35	117.68	4.33	4%
03160112	Upper Black Warrior	133.91	148.10	14.19	11%
03160113	Lower Black Warrior	361.98	558.42	196.44	54%
03160201	Middle Tombigbee-Chickasaw	49.81	39.24	-10.58	-21%
03160202	Sucarnoochee	1.31	1.31	0.00	0%
03160203	Lower Tombigbee	118.24	165.59	47.35	40%
03160204	Mobile-Tensaw	1,048.92	1,604.96	556.04	53%
03160205	Mobile Bay	5.76	15.68	9.91	172%
03170002	Upper Chickasawhay	0.00	0.00	0.00	0%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%
03170008	Escatawpa	0.37	0.44	0.07	18%
03170009	Mississippi Coastal	1.36	1.39	0.02	2%
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0%
06030001	Guntersville Lake	1,103.12	23.43	-1,079.70	-98%
06030002	Wheeler Lake	2,942.67	3,473.03	530.36	18%
06030003	Elk	0.00	0.00	0.00	0%
06030004	Lower Elk	0.33	0.44	0.11	32%
06030005	Pickwick Lake	1,349.78	151.98	-1,197.80	-89%
06030006	Bear	7.03	7.11	0.08	1%

Public-Supply Returns

Public-Supply Returns 2010

Public-supply returns for 2010 were estimated to be 524 MGD. Estimates of returns by sector indicate that public supply accounted for 6 percent of the total returns for 2010. Public-supply returns for 2010 are listed in table 33. Forty-two percent (42%) of the public-supply returns for 2010 occurred in the Locust Fork (03160111; 93 MGD), the Wheeler Lake (06030002; 68 MGD), and the Upper Black Warrior (03160112; 61 MGD) subbasins, with the Locust Fork subbasin accounting for 18 percent of public-supply returns (figure 42).

Figure 42. Map of public-supply returns, 2010, in MGD.

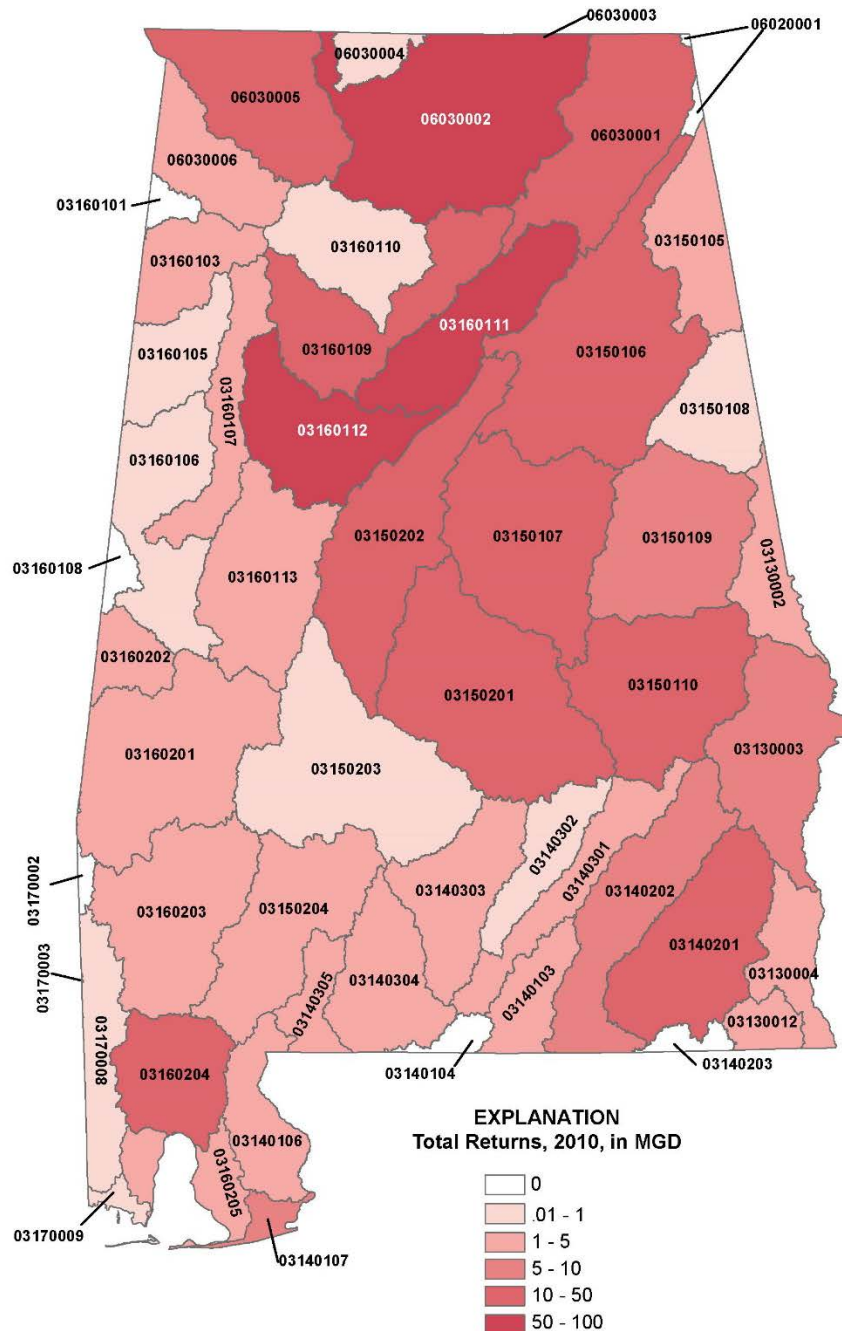


Table 33. Public-supply returns, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	5.91	5.73	5.93	3.97	4.73	3.79	3.28	3.52	3.10	2.81	2.60	2.86	4.02
03130003	Middle Chattahoochee-W.F. George Res.	8.45	8.67	7.97	6.34	7.24	5.31	4.41	4.21	3.95	3.49	3.26	3.02	5.53
03130004	Lower Chattahoochee	6.79	7.42	5.32	4.38	3.85	3.41	3.35	3.33	3.23	3.06	3.04	2.92	4.18
03130012	Chipola	3.13	3.42	1.84	1.27	1.46	1.29	1.19	1.28	1.18	1.07	1.19	1.17	1.62
03140103	Yellow	2.80	3.54	2.13	1.32	0.97	1.11	0.85	0.68	0.67	0.48	0.77	0.84	1.35
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	3.96	3.97	2.94	1.61	2.12	1.67	1.87	2.28	1.59	1.55	2.48	1.80	2.32
03140107	Perdido Bay	5.36	5.64	5.88	5.33	5.62	7.96	8.46	8.12	6.86	6.34	6.25	5.47	6.44
03140201	Upper Choctawhatchee	19.90	22.87	14.74	10.79	11.15	10.51	10.14	10.73	8.89	8.86	9.72	8.81	12.26
03140202	Pea	7.48	6.81	6.84	6.00	5.46	5.39	5.16	5.74	5.24	5.25	5.23	5.44	5.84
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	3.58	3.57	2.99	1.83	1.83	1.46	1.34	1.51	1.27	1.12	1.21	1.65	1.95
03140302	Patsaliga	0.67	0.76	0.71	0.42	0.34	0.31	0.26	0.26	0.27	0.35	0.28	0.32	0.41
03140303	Sepulga	3.26	3.40	3.00	2.12	1.90	1.80	1.47	1.37	1.21	1.17	1.21	1.15	1.92
03140304	Lower Conecuh	3.39	4.12	2.96	1.49	3.07	1.47	1.73	3.43	1.11	1.39	2.26	1.50	2.33
03140305	Escambia	4.74	5.26	4.03	2.63	3.10	2.13	2.20	2.13	1.87	2.04	2.34	2.60	2.92
03150105	Upper Coosa	2.59	2.99	2.91	2.08	1.91	1.49	1.07	1.07	1.51	1.70	1.23	1.40	1.83
03150106	Middle Coosa	54.43	63.20	63.45	41.65	43.83	36.52	30.46	28.29	25.48	25.63	27.24	28.83	39.08
03150107	Lower Coosa	14.93	17.38	17.06	10.39	10.28	9.20	7.78	7.52	6.77	6.36	7.74	8.56	10.33
03150108	Upper Tallapoosa	0.65	0.63	0.64	0.45	0.45	0.37	0.37	0.35	0.30	0.32	0.31	0.34	0.43
03150109	Middle Tallapoosa	8.73	8.85	7.56	5.29	5.81	4.81	5.48	6.03	4.20	4.64	5.05	5.52	6.00
03150110	Lower Tallapoosa	17.63	18.02	16.96	13.34	13.34	12.96	11.50	11.60	10.47	9.81	9.86	9.62	12.93
03150201	Upper Alabama	52.20	50.92	46.55	37.57	39.91	37.60	36.88	36.79	34.66	33.96	36.77	36.01	39.98
03150202	Cahaba	36.14	42.04	35.68	27.46	27.48	27.25	22.84	24.92	22.73	21.77	24.57	26.52	28.28
03150203	Middle Alabama	0.63	0.64	0.57	0.31	0.40	0.45	0.40	0.53	0.50	0.30	0.40	0.33	0.46
03150204	Lower Alabama	1.20	1.40	1.29	0.98	1.27	1.10	1.11	0.96	1.17	1.07	0.87	0.57	1.08
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahaatchee	2.10	2.23	1.92	1.71	1.98	1.48	0.95	1.04	1.23	1.07	0.94	1.27	1.49
03160105	Luxapallila	1.17	1.18	1.27	0.94	1.10	0.64	0.50	0.53	0.40	0.40	0.64	0.97	0.81
03160106	Middle Tombigbee-Lubbub	1.42	1.56	1.73	1.01	0.62	0.44	0.30	0.40	0.60	0.28	0.61	0.61	0.80
03160107	Sipsey	1.85	1.95	1.45	1.44	2.15	1.44	1.14	1.04	1.04	1.04	1.25	1.20	1.42
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	14.86	17.24	17.48	11.88	14.24	9.88	7.67	7.56	6.43	6.20	7.22	8.95	10.80
03160110	Sipsey Fork	0.55	0.53	0.49	0.38	0.39	0.28	0.24	0.26	0.26	0.32	0.41	0.45	0.38
03160111	Locust Fork	125.70	139.80	142.41	86.10	104.88	89.69	75.97	66.85	66.98	62.18	71.94	80.67	92.76
03160112	Upper Black Warrior	82.99	93.72	93.01	74.05	70.54	52.23	47.21	47.95	41.87	40.46	44.79	47.01	61.32
03160113	Lower Black Warrior	5.25	7.36	6.50	5.39	5.63	4.37	4.65	3.79	3.71	3.72	4.71	4.25	4.94
03160201	Middle Tombigbee-Chickasaw	3.99	4.36	3.16	1.78	2.14	1.51	1.62	1.75	1.06	1.08	3.38	1.99	2.32
03160202	Sucarnoochee	1.88	1.94	2.11	1.11	0.70	0.57	0.89	1.14	0.62	0.52	0.95	1.01	1.12
03160203	Lower Tombigbee	1.65	1.91	2.74	1.77	1.64	2.64	1.50	1.38	1.06	0.93	1.04	0.99	1.60
03160204	Mobile-Tensaw	63.08	63.39	52.29	38.26	47.08	43.75	37.00	47.36	37.82	33.11	40.65	38.52	45.19
03160205	Mobile Bay	2.99	3.14	2.84	2.31	2.43	2.58	2.35	2.66	2.37	2.28	2.35	2.31	2.55
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.62	0.67	0.36	0.22	0.45	0.24	0.23	0.32	0.36	0.20	0.48	0.29	0.37
03170009	Mississippi Coastal	1.18	1.13	1.08	0.89	0.96	0.98	0.99	1.17	0.98	0.81	0.76	0.71	0.97
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	15.89	18.20	16.87	13.46	14.52	12.65	10.17	10.24	9.55	9.63	10.48	12.13	12.82
06030002	Wheeler Lake	90.70	101.91	86.94	70.89	69.04	63.62	57.30	56.20	51.80	51.19	57.82	64.33	68.48
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.14	0.22	0.19	0.15	0.13	0.16	0.46	0.49	0.51	0.52	0.51	0.52	0.33
06030005	Pickwick Lake	30.24	30.73	15.62	27.66	14.65	13.17	12.22	11.84	11.01	9.85	11.17	11.93	16.68
06030006	Bear	5.11	5.67	4.56	3.81	4.59	4.01	2.81	2.46	1.69	1.97	2.73	3.46	3.57

Public-Supply Returns 2040

Public-supply returns for 2040 are estimated to be 596 MGD. Estimates of returns by sector indicate that public supply accounted for 6 percent of the total returns for 2040. Public-supply returns for 2040 are listed in table 34. Forty-three percent (43%) of the public-supply returns for 2040 occur in the Locust Fork (03160111; 96 MGD), the Wheeler Lake (06030002; 92 MGD), and the Upper Black Warrior (03160112; 67 MGD) subbasins, with the Locust Fork subbasin accounting for 16 percent of public-supply returns (figure 43).

Figure 43. Map of public-supply returns, 2040, in MGD.

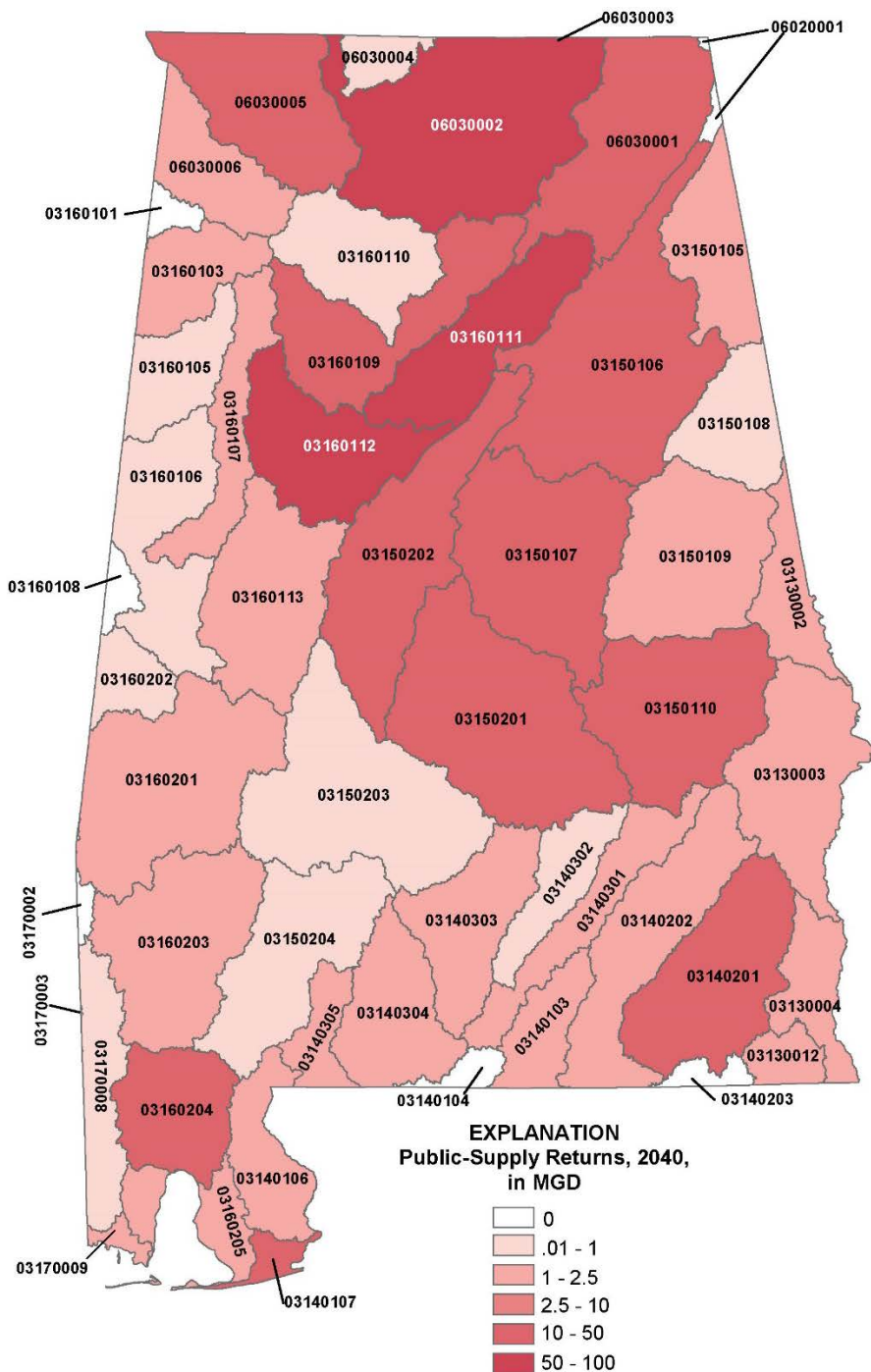


Table 34. Public-supply returns, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	6.94	6.74	6.97	4.66	5.55	4.45	3.86	4.14	3.64	3.31	3.05	3.36	4.72
03130003	Middle Chattahoochee-W.F. George Res.	11.42	11.72	10.76	8.57	9.78	7.17	5.96	5.69	5.34	4.71	4.40	4.08	7.47
03130004	Lower Chattahoochee	8.17	8.93	6.41	5.27	4.63	4.11	4.03	4.00	3.89	3.69	3.66	3.51	5.02
03130012	Chipola	4.11	4.49	2.42	1.67	1.91	1.70	1.56	1.68	1.55	1.41	1.57	1.54	2.13
03140103	Yellow	2.89	3.65	2.19	1.36	1.00	1.15	0.87	0.70	0.69	0.49	0.79	0.87	1.39
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	4.86	4.87	3.61	1.98	2.60	2.04	2.30	2.80	1.95	1.90	3.05	2.21	2.85
03140107	Perdido Bay	9.10	9.58	10.00	9.05	9.55	13.52	14.37	13.80	11.66	10.77	10.62	9.30	10.94
03140201	Upper Choctawhatchee	24.10	27.69	17.85	13.07	13.51	12.73	12.28	13.00	10.76	10.72	11.77	10.66	14.84
03140202	Pea	8.48	7.72	7.76	6.80	6.19	6.11	5.85	6.51	5.94	5.95	5.93	6.16	6.62
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	3.88	3.87	3.24	1.98	1.98	1.58	1.45	1.63	1.38	1.22	1.31	1.79	2.11
03140302	Patsaliga	0.70	0.79	0.75	0.44	0.36	0.33	0.27	0.27	0.28	0.36	0.29	0.34	0.43
03140303	Sepulga	3.03	3.16	2.79	1.97	1.77	1.68	1.37	1.27	1.13	1.09	1.12	1.07	1.79
03140304	Lower Conecuh	3.13	3.80	2.73	1.37	2.84	1.35	1.60	3.17	1.02	1.28	2.09	1.38	2.15
03140305	Escambia	4.41	4.89	3.75	2.45	2.88	1.98	2.04	1.98	1.74	1.90	2.18	2.43	2.72
03150105	Upper Coosa	2.86	3.31	3.22	2.30	2.11	1.65	1.19	1.19	1.67	1.88	1.36	1.55	2.02
03150106	Middle Coosa	61.43	71.33	71.62	47.01	49.47	41.22	34.38	31.93	28.76	28.93	30.75	32.54	44.11
03150107	Lower Coosa	19.47	22.66	22.25	13.54	13.41	12.00	10.15	9.81	8.83	8.29	10.09	11.16	13.47
03150108	Upper Tallapoosa	0.68	0.65	0.66	0.47	0.47	0.39	0.38	0.37	0.31	0.33	0.32	0.35	0.45
03150109	Middle Tallapoosa	8.62	8.74	7.46	5.22	5.74	4.75	5.41	5.95	4.15	4.58	4.98	5.45	5.92
03150110	Lower Tallapoosa	22.81	23.32	21.94	17.26	17.26	16.77	14.88	15.01	13.54	12.70	12.76	12.44	16.72
03150201	Upper Alabama	58.58	57.15	52.24	42.17	44.79	42.19	41.39	41.29	38.89	38.11	41.26	40.42	44.87
03150202	Cahaba	44.76	52.07	44.18	34.01	34.03	33.75	28.28	30.86	28.15	26.96	30.43	32.84	35.03
03150203	Middle Alabama	0.52	0.52	0.47	0.25	0.33	0.37	0.33	0.44	0.41	0.25	0.33	0.28	0.37
03150204	Lower Alabama	1.02	1.19	1.09	0.83	1.07	0.93	0.94	0.81	0.99	0.90	0.74	0.48	0.92
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahaatchee	1.86	1.98	1.70	1.52	1.76	1.32	0.84	0.92	1.09	0.95	0.84	1.13	1.32
03160105	Luxapallila	1.02	1.02	1.10	0.81	0.95	0.55	0.43	0.46	0.35	0.35	0.55	0.84	0.70
03160106	Middle Tombigbee-Lubbub	1.35	1.48	1.64	0.96	0.59	0.41	0.29	0.38	0.57	0.26	0.58	0.58	0.76
03160107	Sipsey	1.84	1.93	1.44	1.43	2.13	1.43	1.13	1.03	1.03	1.03	1.24	1.19	1.40
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	15.75	18.28	18.53	12.59	15.10	10.48	8.13	8.01	6.82	6.58	7.65	9.49	11.45
03160110	Sipsey Fork	0.56	0.54	0.50	0.38	0.39	0.28	0.25	0.27	0.27	0.32	0.41	0.45	0.38
03160111	Locust Fork	130.32	144.94	147.64	89.26	108.74	92.98	78.76	69.30	69.45	64.46	74.59	83.63	96.17
03160112	Upper Black Warrior	90.69	102.41	101.65	80.92	77.09	57.08	51.59	52.40	45.76	44.21	48.95	51.38	67.01
03160113	Lower Black Warrior	6.13	8.59	7.58	6.29	6.57	5.10	5.43	4.43	4.33	4.34	5.50	4.96	5.77
03160201	Middle Tombigbee-Chickasaw	3.26	3.56	2.59	1.45	1.75	1.23	1.33	1.43	0.87	0.88	2.77	1.63	1.89
03160202	Sucarnoochee	1.60	1.67	1.81	0.94	0.60	0.49	0.76	0.97	0.53	0.44	0.82	0.87	0.96
03160203	Lower Tombigbee	1.43	1.65	2.36	1.53	1.42	2.28	1.29	1.19	0.92	0.80	0.90	0.85	1.38
03160204	Mobile-Tensaw	63.59	63.92	52.72	38.58	47.47	44.11	37.30	47.76	38.13	33.38	40.98	38.84	45.56
03160205	Mobile Bay	3.47	3.65	3.30	2.68	2.82	2.99	2.73	3.09	2.75	2.64	2.73	2.68	2.96
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.73	0.80	0.42	0.26	0.53	0.28	0.28	0.38	0.42	0.24	0.57	0.35	0.44
03170009	Mississippi Coastal	1.23	1.18	1.13	0.93	1.00	1.02	1.03	1.22	1.02	0.84	0.80	0.74	1.01
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	18.65	21.36	19.80	15.80	17.04	14.85	11.94	12.02	11.21	11.30	12.31	14.23	15.04
06030002	Wheeler Lake	121.91	136.97	116.85	95.27	92.79	85.51	77.02	75.54	69.61	68.81	77.71	86.46	92.04
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.18	0.29	0.25	0.20	0.17	0.21	0.61	0.64	0.67	0.69	0.67	0.69	0.44
06030005	Pickwick Lake	30.75	31.25	15.88	28.13	14.89	13.39	12.43	12.04	11.20	10.01	11.36	12.13	16.95
06030006	Bear	5.22	5.80	4.66	3.89	4.69	4.09	2.87	2.52	1.73	2.01	2.79	3.54	3.65

Public-Supply Returns Comparing 2010 to 2040

The comparison of public-supply returns from 2010 to 2040 is shown in table 35. Public-supply returns increase from 524 MGD in 2010 to 596 MGD in 2040, an increase of 72 MGD (12%). The Wheeler Lake (06030002; 24 MGD), the Cahaba (03150202; 7 MGD), the Upper Black Warrior (03160112; 6 MGD), and the Middle Coosa (03150106; 5 MGD) subbasins have the largest increases in returns from 2010 to 2040. The Middle Tombigbee-Chickasaw (03160201; -0.42 MGD), the Lower Tombigbee (03160203; -0.22 MGD), and the Escambia (03140305; -0.20 MGD) subbasins have the largest decreases in public-supply returns from 2010 to 2040 (figure 44).

Figure 44. Map of public-supply return comparison, 2010 to 2040, in MGD.

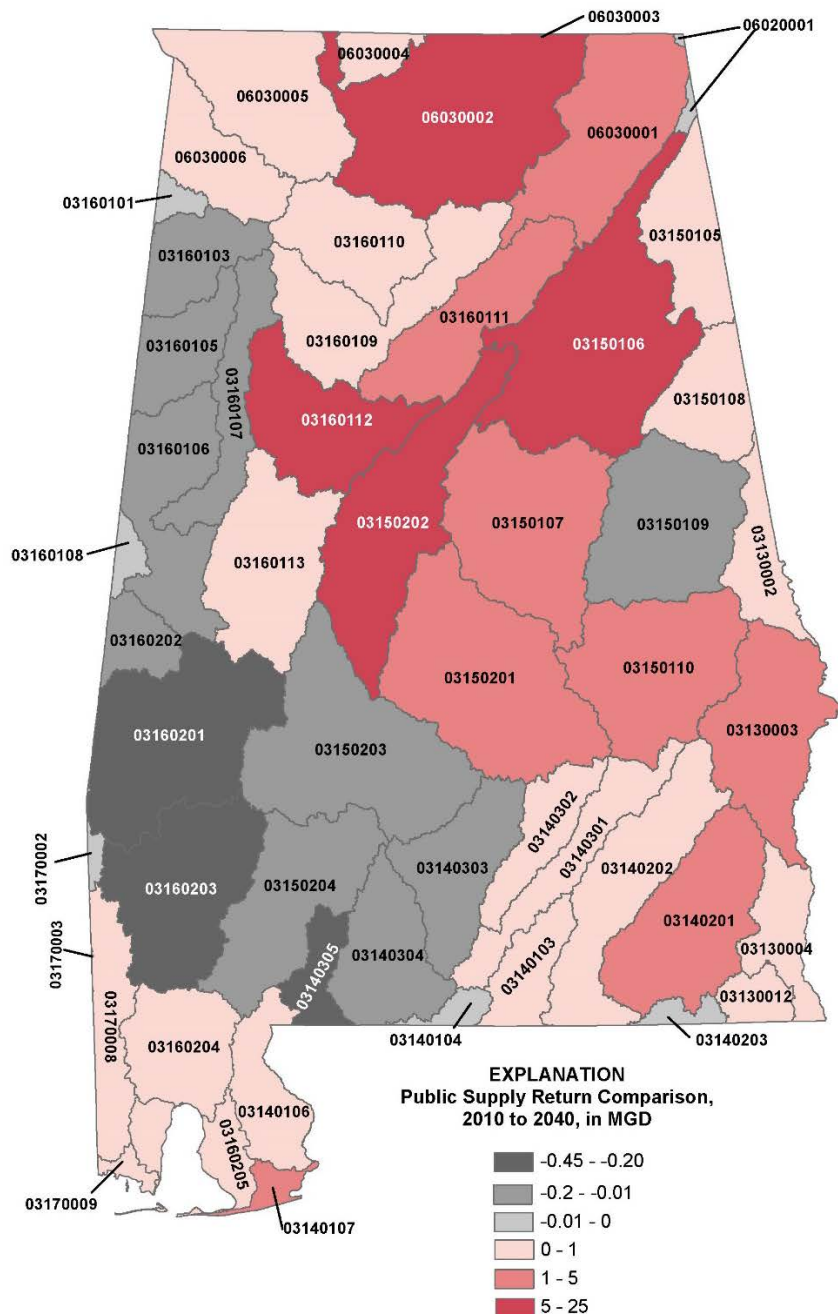


Table 35. Public-supply return comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	2010 Average	2040 Average	Change in Returns	Percent Change
03130002	Middle Chattahoochee-Lake Harding	4.02	4.72	0.71	18%
03130003	Middle Chattahoochee-W.F. George Res.	5.53	7.47	1.94	35%
03130004	Lower Chattahoochee	4.18	5.02	0.85	20%
03130012	Chipola	1.62	2.13	0.51	31%
03140103	Yellow	1.35	1.39	0.04	3%
03140104	Blackwater	0.00	0.00	0.00	0%
03140106	Perdido	2.32	2.85	0.53	23%
03140107	Perdido Bay	6.44	10.94	4.50	70%
03140201	Upper Choctawhatchee	12.26	14.84	2.59	21%
03140202	Pea	5.84	6.62	0.78	13%
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0%
03140301	Upper Conecuh	1.95	2.11	0.16	8%
03140302	Patsaliga	0.41	0.43	0.02	4%
03140303	Sepulga	1.92	1.79	-0.13	-7%
03140304	Lower Conecuh	2.33	2.15	-0.18	-8%
03140305	Escambia	2.92	2.72	-0.20	-7%
03150105	Upper Coosa	1.83	2.02	0.19	11%
03150106	Middle Coosa	39.08	44.11	5.03	13%
03150107	Lower Coosa	10.33	13.47	3.14	30%
03150108	Upper Tallapoosa	0.43	0.45	0.02	4%
03150109	Middle Tallapoosa	6.00	5.92	-0.08	-1%
03150110	Lower Tallapoosa	12.93	16.72	3.80	29%
03150201	Upper Alabama	39.98	44.87	4.89	12%
03150202	Cahaba	28.28	35.03	6.75	24%
03150203	Middle Alabama	0.46	0.37	-0.08	-18%
03150204	Lower Alabama	1.08	0.92	-0.17	-15%
03160101	Upper Tombigbee	0.00	0.00	0.00	0%
03160103	Buttahatchee	1.49	1.32	-0.17	-11%
03160105	Luxapallila	0.81	0.70	-0.11	-14%
03160106	Middle Tombigbee-Lubbub	0.80	0.76	-0.04	-5%
03160107	Sipsey	1.42	1.40	-0.01	-1%
03160108	Noxubee	0.00	0.00	0.00	0%
03160109	Mulberry Fork	10.80	11.45	0.65	6%
03160110	Sipsey Fork	0.38	0.38	0.00	1%
03160111	Locust Fork	92.76	96.17	3.41	4%
03160112	Upper Black Warrior	61.32	67.01	5.69	9%
03160113	Lower Black Warrior	4.94	5.77	0.83	17%
03160201	Middle Tombigbee-Chickasaw	2.32	1.89	-0.42	-18%
03160202	Sucarnoochee	1.12	0.96	-0.16	-14%
03160203	Lower Tombigbee	1.60	1.38	-0.22	-14%
03160204	Mobile-Tensaw	45.19	45.56	0.37	1%
03160205	Mobile Bay	2.55	2.96	0.41	16%
03170002	Upper Chickasawhay	0.00	0.00	0.00	0%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%
03170008	Escatawpa	0.37	0.44	0.07	18%
03170009	Mississippi Coastal	0.97	1.01	0.04	4%
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0%
06030001	Guntersville Lake	12.82	15.04	2.23	17%
06030002	Wheeler Lake	68.48	92.04	23.56	34%
06030003	Elk	0.00	0.00	0.00	0%
06030004	Lower Elk	0.33	0.44	0.11	32%
06030005	Pickwick Lake	16.68	16.95	0.28	2%
06030006	Bear	3.57	3.65	0.08	2%

Industrial, Thermoelectric, and Mining Returns

Industrial, Thermoelectric, and Mining Returns 2010

Industrial, thermoelectric, and mining returns for 2010 were estimated to be 8,937 MGD. Estimates of returns by sector indicate that the industrial, thermoelectric, and mining sector accounted for approximately 94 percent of the total returns for 2010. Industrial, thermoelectric, and mining returns for 2010 are shown in table 36. Seventy-one percent (71%) of the industrial, thermoelectric, and mining returns occurred in the Wheeler Lake (06030002; 2,874 MGD), the Pickwick Lake (06030005; 1,333 MGD), the Guntersville Lake (06030001; 1,090 MGD), and the Mobile-Tensaw (03160204; 1,004 MGD) subbasins, with the Wheeler Lake subbasin accounting for 32 percent of the industrial, thermoelectric, and mining returns for 2010 (figure 45).

Figure 45. Map of industrial, thermoelectric, and mining returns, 2010, in MGD.

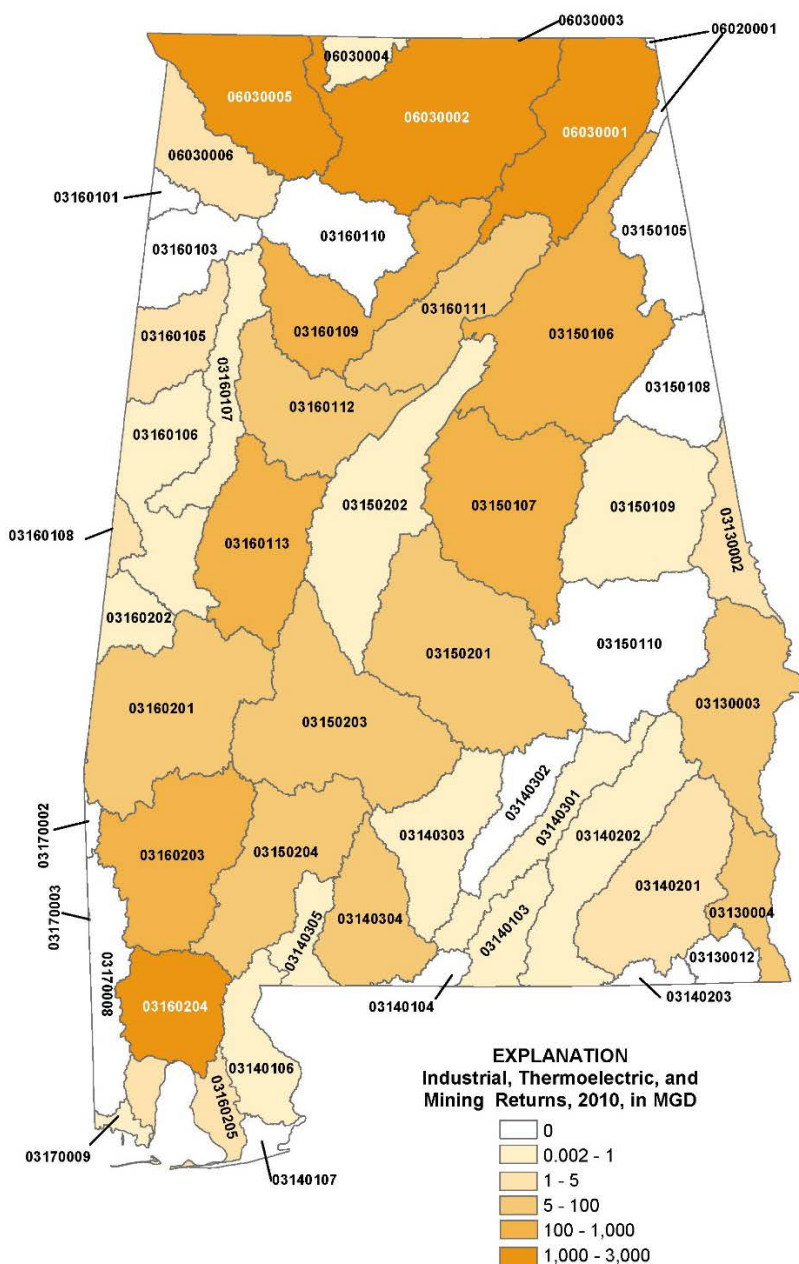


Table 36. Industrial, thermoelectric, and mining returns, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	1.91	1.97	2.14	1.77	2.59	1.90	2.43	2.76	2.26	2.31	2.12	1.68	2.15
03130003	Middle Chattahoochee-W.F. George Res.	15.06	16.36	15.91	24.25	24.79	24.17	21.38	21.01	21.40	21.32	26.69	22.39	21.23
03130004	Lower Chattahoochee	75.56	80.78	71.24	66.66	81.31	87.46	93.63	97.76	94.59	79.63	76.89	72.97	81.54
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.12	0.08	0.15	0.18	0.19	0.18	0.24	0.22	0.27	0.20	0.21	0.17	0.18
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	0.35	0.33	0.35	0.41	0.39	0.46	0.42	0.46	0.42	0.32	0.42	0.28	0.38
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	2.90	3.10	2.82	3.12	4.15	4.11	4.21	4.03	3.96	3.90	4.24	3.80	3.70
03140202	Pea	1.00	1.06	0.95	0.96	0.95	0.97	0.78	1.00	0.74	1.13	0.91	1.07	0.96
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	0.11	0.13	0.11	0.11	0.09	0.18	0.19	0.28	0.17	0.26	0.24	0.23	0.18
03140302	Patsaliga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140303	Sepulga	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03140304	Lower Conecuh	26.15	21.16	21.94	37.38	38.71	36.96	35.40	39.00	30.41	30.10	35.74	37.21	32.51
03140305	Escambia	0.09	0.11	0.10	0.11	0.10	0.09	0.09	0.10	0.12	0.12	0.09	0.12	0.10
03150105	Upper Coosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150106	Middle Coosa	120.15	150.30	142.36	139.28	139.42	179.60	217.24	226.23	144.52	143.47	149.33	163.70	159.63
03150107	Lower Coosa	718.80	562.29	582.36	496.68	642.34	888.16	883.23	567.59	666.29	525.71	695.00	860.70	674.10
03150108	Upper Tallapoosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150109	Middle Tallapoosa	0.44	0.35	0.19	0.35	0.23	0.39	0.30	0.23	0.16	0.18	0.03	0.14	0.25
03150110	Lower Tallapoosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150201	Upper Alabama	88.34	90.46	93.63	126.42	85.91	92.82	110.48	98.68	91.77	83.52	79.59	76.17	93.15
03150202	Cahaba	0.20	0.78	1.56	0.02	1.98	0.03	0.91	1.98	0.03	0.15	0.95	1.65	0.85
03150203	Middle Alabama	22.10	25.30	21.05	17.40	18.50	17.77	17.20	16.90	21.40	13.90	15.72	19.90	18.93
03150204	Lower Alabama	47.04	50.76	45.88	45.01	44.38	48.23	50.14	57.66	56.45	53.02	49.51	50.01	49.84
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160105	Luxapallila	0.05	0.21	1.27	0.53	0.77	1.75	2.05	8.74	5.68	0.04	0.73	0.23	1.84
03160106	Middle Tombigbee-Lubbub	0.33	0.36	0.59	0.49	0.28	0.36	0.28	0.28	0.28	0.33	0.33	0.23	0.34
03160107	Sipsey	0.00	0.00	0.00	0.05	0.06	0.06	0.00	0.00	0.01	0.01	0.00	0.00	0.02
03160108	Noxubee	4.34	13.51	11.18	5.47	1.10	1.65	0.00	0.00	0.00	0.00	0.00	0.00	3.10
03160109	Mulberry Fork	851.71	962.01	994.71	929.20	749.50	1,008.95	989.93	978.02	953.24	557.45	554.69	895.86	868.77
03160110	Sipsey Fork	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160111	Locust Fork	27.90	27.90	29.03	19.20	14.94	17.73	13.75	18.21	24.32	14.53	14.29	25.26	20.59
03160112	Upper Black Warrior	99.63	78.55	69.84	75.60	72.62	64.19	68.06	68.53	60.40	69.13	73.02	71.55	72.59
03160113	Lower Black Warrior	414.57	408.71	368.23	263.97	416.66	410.76	413.25	412.99	285.94	299.53	209.37	380.41	357.03
03160201	Middle Tombigbee-Chickasaw	52.46	55.43	39.13	45.29	51.38	46.57	48.65	45.62	45.49	47.28	47.84	44.81	47.50
03160202	Sucunoochee	0.00	0.07	0.08	0.09	0.10	0.11	0.19	0.02	0.12	0.42	0.74	0.34	0.19
03160203	Lower Tombigbee	112.97	113.92	108.42	110.91	112.12	108.79	116.37	117.94	120.03	126.63	121.39	130.16	116.64
03160204	Mobile-Tensaw	1,016.51	1,168.01	1,060.71	919.21	889.74	1,139.86	1,138.94	1,169.91	908.58	666.20	993.38	973.72	1,003.73
03160205	Mobile Bay	4.49	4.24	3.58	2.40	3.52	3.14	2.48	2.88	2.71	2.81	2.85	3.46	3.21
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170009	Mississippi Coastal	0.33	1.12	0.27	0.37	0.28	0.36	0.35	0.32	0.32	0.31	0.26	0.41	0.39
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	1,360.22	1,259.28	1,081.64	1,087.03	980.36	1,300.91	1,055.10	1,303.00	1,107.66	1,032.39	706.32	809.76	1,090.31
06030002	Wheeler Lake	3,045.62	2,904.19	2,014.61	3,045.87	3,082.65	3,087.11	2,981.17	2,712.92	3,077.34	2,844.96	2,646.83	3,047.05	2,874.19
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030005	Pickwick Lake	1,402.46	1,388.51	1,381.07	1,378.86	1,356.62	1,399.67	1,399.86	1,390.83	1,389.88	1,380.24	846.51	1,282.72	1,333.10
06030006	Bear	3.89	3.06	3.05	3.55	3.48	3.19	4.13	3.65	2.58	2.93	4.52	3.53	3.46

Industrial, Thermoelectric, and Mining Returns 2040

Industrial, thermoelectric, and mining returns for 2040 are estimated to be 8,927 MGD. Estimates of returns by sector indicate that the industrial, thermoelectric, and mining sector account for approximately 94 percent of the total returns for 2040. Industrial, thermoelectric, and mining returns are listed in table 37. Eighty-two percent (82%) of the industrial, thermoelectric, and mining returns occur in the Wheeler Lake (06030002; 3,381 MGD), the Mobile-Tensaw (03160204; 1,559 MGD), the Mulberry Fork (03160109; 1,347 MGD), and the Lower Coosa (03150107; 1,042 MGD) subbasins, with the Wheeler Lake subbasin accounting for 38 percent of the industrial, thermoelectric, and mining returns for 2040 (figure 46).

Figure 46. Map of industrial, thermoelectric, and mining returns, 2040, in MGD.

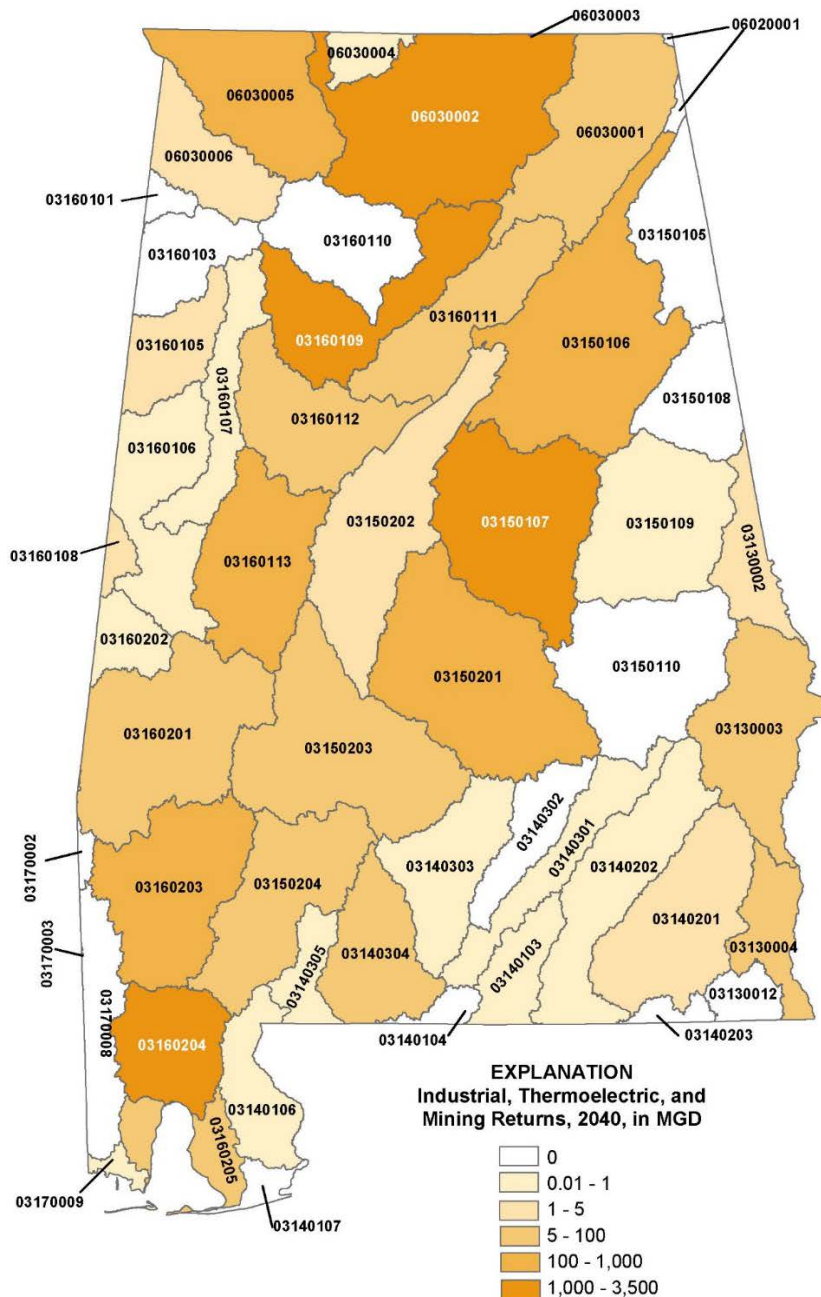


Table 37. Industrial, thermoelectric, and mining returns, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	1.91	1.97	2.14	1.77	2.59	1.90	2.43	2.76	2.26	2.31	2.12	1.68	2.15
03130003	Middle Chattahoochee-W.F. George Res.	16.06	17.46	16.98	25.86	26.44	25.78	22.80	22.40	22.82	22.74	28.46	23.88	22.64
03130004	Lower Chattahoochee	73.39	78.46	69.20	64.75	78.98	84.95	90.94	94.96	91.88	77.35	74.68	70.88	79.20
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	0.05	0.04	0.05	0.05	0.05	0.04	0.06	0.06	0.08	0.06	0.08	0.08	0.06
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	0.35	0.33	0.35	0.41	0.39	0.46	0.42	0.46	0.42	0.32	0.42	0.28	0.38
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	3.18	3.39	3.08	3.42	4.54	4.50	4.62	4.41	4.35	4.27	4.65	4.17	4.05
03140202	Pea	0.86	0.91	0.81	0.82	0.82	0.83	0.67	0.86	0.63	0.97	0.78	0.92	0.82
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	0.17	0.19	0.17	0.16	0.14	0.28	0.30	0.43	0.26	0.39	0.37	0.36	0.27
03140302	Patsaliga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140303	Sepulga	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03140304	Lower Conecuh	37.76	45.98	37.69	65.29	68.13	63.71	60.62	62.49	52.64	52.38	60.62	65.38	56.06
03140305	Escambia	0.20	0.24	0.23	0.24	0.21	0.20	0.20	0.22	0.28	0.26	0.21	0.27	0.23
03150105	Upper Coosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150106	Middle Coosa	170.27	215.75	207.82	195.21	201.97	249.69	307.95	322.87	208.37	200.37	209.88	234.75	227.08
03150107	Lower Coosa	1,110.91	868.92	899.96	767.50	992.69	1,372.78	1,365.14	877.13	1,029.74	812.37	1,074.12	1,330.32	1,041.80
03150108	Upper Tallapoosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150109	Middle Tallapoosa	0.44	0.35	0.19	0.35	0.23	0.39	0.30	0.23	0.16	0.18	0.03	0.14	0.25
03150110	Lower Tallapoosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03150201	Upper Alabama	100.03	101.35	105.99	145.76	98.02	101.78	116.65	102.98	97.60	92.25	89.47	84.64	103.04
03150202	Cahaba	0.24	0.92	1.83	0.02	2.33	0.03	1.07	2.33	0.03	0.18	1.12	1.94	1.00
03150203	Middle Alabama	16.37	18.74	15.59	12.89	13.71	13.16	12.74	12.52	15.85	10.31	11.66	14.75	14.02
03150204	Lower Alabama	59.81	64.49	58.30	57.20	56.41	61.30	63.72	73.29	71.74	67.39	62.92	63.57	63.34
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160105	Luxapallila	0.05	0.22	1.28	0.54	0.78	2.25	2.60	10.90	6.92	0.04	0.73	0.23	2.21
03160106	Middle Tombigbee-Lubbub	0.34	0.36	0.59	0.49	0.29	0.36	0.28	0.28	0.28	0.33	0.33	0.23	0.35
03160107	Sipsey	0.00	0.00	0.00	0.05	0.06	0.06	0.00	0.00	0.01	0.01	0.00	0.00	0.02
03160108	Noxubee	4.34	13.51	11.18	5.47	1.10	1.65	0.00	0.00	0.00	0.00	0.00	0.00	3.10
03160109	Mulberry Fork	1,320.37	1,491.71	1,542.72	1,440.83	1,162.21	1,564.65	1,535.16	1,516.68	1,478.16	864.10	859.95	1,389.24	1,347.15
03160110	Sipsey Fork	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160111	Locust Fork	29.19	29.43	30.24	19.97	15.70	18.45	14.27	19.00	25.59	15.10	14.90	26.25	21.51
03160112	Upper Black Warrior	95.48	95.73	65.37	79.44	84.82	81.47	87.76	80.82	62.87	70.37	87.72	81.21	81.09
03160113	Lower Black Warrior	641.29	633.17	569.97	408.43	645.02	635.98	639.79	639.21	442.44	463.71	323.91	588.86	552.65
03160201	Middle Tombigbee-Chickasaw	41.95	34.95	35.64	38.56	39.12	35.02	36.63	37.72	36.24	37.23	38.42	36.62	37.34
03160202	Sucarnoochee	0.00	0.13	0.15	0.16	0.18	0.21	0.35	0.04	0.21	0.78	1.43	0.63	0.36
03160203	Lower Tombigbee	159.04	160.38	152.64	156.14	157.85	153.15	163.82	166.04	168.98	178.27	170.86	183.25	164.20
03160204	Mobile-Tensaw	1,579.25	1,814.64	1,647.92	1,428.08	1,382.30	1,770.90	1,769.47	1,817.59	1,411.57	1,035.00	1,543.31	1,512.77	1,559.40
03160205	Mobile Bay	20.27	16.23	13.84	9.19	14.01	12.44	9.45	10.94	10.96	10.95	10.66	13.66	12.72
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170009	Mississippi Coastal	0.32	1.08	0.26	0.36	0.27	0.35	0.34	0.31	0.31	0.29	0.25	0.39	0.38
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	9.39	8.29	7.97	7.86	8.80	8.64	7.92	7.88	7.70	8.11	9.03	9.00	8.38
06030002	Wheeler Lake	3,582.85	3,415.45	2,367.34	3,580.39	3,625.50	3,632.96	3,508.20	3,192.56	3,621.11	3,346.68	3,113.12	3,585.75	3,380.99
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030005	Pickwick Lake	128.34	118.38	128.17	147.67	159.60	140.35	136.70	105.07	139.53	144.62	140.29	131.61	135.03
06030006	Bear	3.89	3.06	3.05	3.55	3.48	3.19	4.13	3.65	2.58	2.93	4.52	3.53	3.46

Industrial, Thermoelectric, and Mining Returns Comparing 2010 to 2040

The comparison of total returns from 2010 to 2040 is shown in table 38. Industrial, thermoelectric, and mining returns decreased from 8,937 MGD in 2010 to 8,927 MGD in 2040, a decrease of 10 MGD (0.1%). The Mobile-Tensaw (03160109; 556 MGD), the Wheeler Lake (06030002; 507 MGD), the Mulberry Fork (03160109; 478 MGD), the Lower Coosa (03150107; 368 MGD), and the Lower Black Warrior (03160113; 196 MGD), subbasins have the largest increases in returns from 2010 to 2040. The Pickwick Lake (06030005; -1,198 MGD) and the Guntersville Lake (06030001; -1,082 MGD) subbasins have the largest decreases in returns in 2040, primarily related to the closure of the Widows Creek and Colbert Fossil thermoelectric plants (figure 48).

Figure 47. Map of industrial, thermoelectric, and mining return comparison, 2010 to 2040, in MGD.

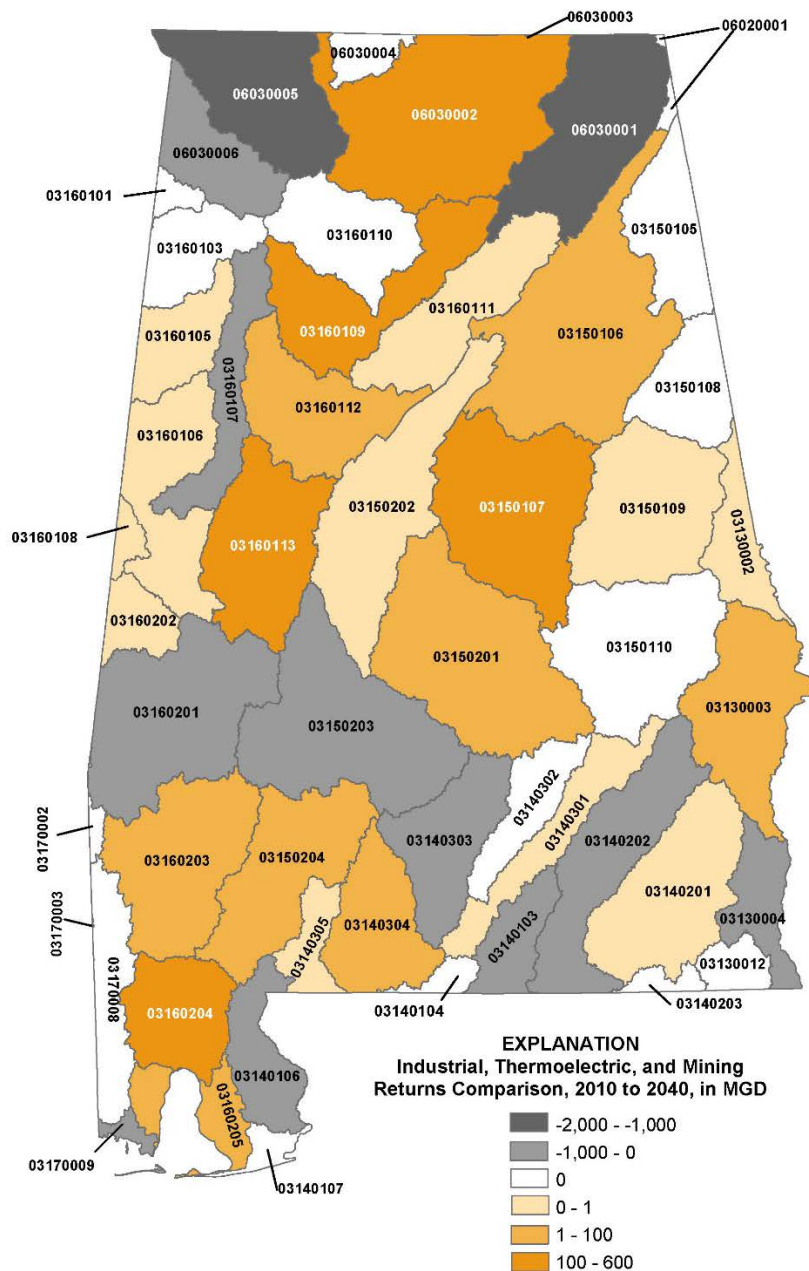


Table 38. Industrial, thermoelectric, and mining return comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	2010 Average	2040 Average	Change in Returns	Percent Change
03130002	Middle Chattahoochee-Lake Harding	2.15	2.15	0.00	0%
03130003	Middle Chattahoochee-W.F. George Res.	21.23	22.64	1.41	7%
03130004	Lower Chattahoochee	81.54	79.20	-2.34	-3%
03130012	Chipola	0.00	0.00	0.00	0%
03140103	Yellow	0.18	0.06	-0.13	-69%
03140104	Blackwater	0.00	0.00	0.00	0%
03140106	Perdido	0.38	0.38	0.00	0%
03140107	Perdido Bay	0.00	0.00	0.00	0%
03140201	Upper Choctawhatchee	3.70	4.05	0.35	9%
03140202	Pea	0.96	0.82	-0.14	-14%
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0%
03140301	Upper Conecuh	0.18	0.27	0.09	53%
03140302	Patsaliga	0.00	0.00	0.00	0%
03140303	Sepulga	0.04	0.03	-0.01	-30%
03140304	Lower Conecuh	32.51	56.06	23.54	72%
03140305	Escambia	0.10	0.23	0.13	124%
03150105	Upper Coosa	0.00	0.00	0.00	0%
03150106	Middle Coosa	159.63	227.08	67.44	42%
03150107	Lower Coosa	674.10	1,041.80	367.70	55%
03150108	Upper Tallapoosa	0.00	0.00	0.00	0%
03150109	Middle Tallapoosa	0.25	0.25	0.00	0%
03150110	Lower Tallapoosa	0.00	0.00	0.00	0%
03150201	Upper Alabama	93.15	103.04	9.89	11%
03150202	Cahaba	0.85	1.00	0.15	18%
03150203	Middle Alabama	18.93	14.02	-4.90	-26%
03150204	Lower Alabama	49.84	63.34	13.50	27%
03160101	Upper Tombigbee	0.00	0.00	0.00	0%
03160103	Buttahatchee	0.00	0.00	0.00	0%
03160105	Luxapallila	1.84	2.21	0.37	20%
03160106	Middle Tombigbee-Lubbub	0.34	0.35	0.00	0%
03160107	Sipsey	0.02	0.02	0.00	-3%
03160108	Noxubee	3.10	3.10	0.00	0%
03160109	Mulberry Fork	868.77	1,347.15	478.37	55%
03160110	Sipsey Fork	0.00	0.00	0.00	0%
03160111	Locust Fork	20.59	21.51	0.92	4%
03160112	Upper Black Warrior	72.59	81.09	8.50	12%
03160113	Lower Black Warrior	357.03	552.65	195.61	55%
03160201	Middle Tombigbee-Chickasaw	47.50	37.34	-10.16	-21%
03160202	Sucarnoochee	0.19	0.36	0.17	87%
03160203	Lower Tombigbee	116.64	164.20	47.56	41%
03160204	Mobile-Tensaw	1,003.73	1,559.40	555.67	55%
03160205	Mobile Bay	3.21	12.72	9.50	296%
03170002	Upper Chickasawhay	0.00	0.00	0.00	0%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%
03170008	Escatawpa	0.00	0.00	0.00	0%
03170009	Mississippi Coastal	0.39	0.38	-0.01	-4%
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0%
06030001	Guntersville Lake	1,090.31	8.38	-1,081.93	-99%
06030002	Wheeler Lake	2,874.19	3,380.99	506.80	18%
06030003	Elk	0.00	0.00	0.00	0%
06030004	Lower Elk	0.00	0.00	0.00	0%
06030005	Pickwick Lake	1,333.10	135.03	-1,198.08	-90%
06030006	Bear	3.46	3.46	0.00	0%

Net Water Demands (Consumption)

A critical aspect of the OWR water assessment effort was to develop consumptive-use estimates for each subbasin. The 2010 Report summarized water withdrawals for each of the subbasins. Return data were compiled for three subsectors (public supply, industrial, and thermoelectric power generation) as described in the preceding section. Consumptive use was then calculated as the difference between surface-water withdrawals and water returns. It was assumed for this report that all agriculture water withdrawals were completely consumptive and that no returns occurred.

Net 2010 Water Use Demands

Net water demand is determined by subtracting the total surface-water withdrawals by the total returns. Net water demand for 2010 was estimated to be 84 MGD. Total net demand for 2010 is listed in table 39. The Mulberry Fork (03160109; 96 MGD), the Escatawpa (03170008; 71 MGD), the Cahaba (03150202; 32 MGD) and the Lower Tallapoosa (03150110; 25 MGD) subbasins had the largest net demand in 2010, meaning more water was withdrawn than was returned. The Upper Black Warrior (03160112; -97 MGD), the Upper Alabama (03150201; -56 MGD), and the Mobile-Tensaw (03160204; -55 MGD) subbasins had the lowest net demand, meaning more water was returned than withdrawn (figure 48).

Net 2040 Water Use Demands

Net water demand for 2040 is estimated to be 240 MGD. Total net demand for 2040 is listed in table 40. The Mulberry Fork (03160109; 130 MGD), the Escatawpa (03170008; 84 MGD), the Pickwick Lake (06030005; 41 MGD), the Cahaba (03150202; 37 MGD), the Wheeler Lake (06030002; 35 MGD), the Lower Tallapoosa (03150110; 34 MGD), the Middle Chattahoochee-W.F. George Reservoir (03130003; 30 MGD), and the Guntersville Lake (06030001; 30 MGD) subbasins have the largest net demand in 2040. The Upper Black Warrior (03160112; -109 MGD), the Mobile-Tensaw (03160204; -63 MGD), and the Upper Alabama (03150201; -58 MGD) have the lowest net demand (figure 49).

Net Water Use Demands Comparing 2010 to 2040

The comparison of net demand from 2010 to 2040 is shown in table 41. Total net demand increased from 84 MGD in 2010 to 240 MGD in 2040, an increase of 156 MGD (186%). The Guntersville Lake (06030001; 42 MGD), the Mulberry Fork (03160109; 34 MGD) and the Pickwick Lake (06030005; 33 MGD) subbasins have the largest increases in net demand from 2010 to 2040. The Upper Black Warrior (03160112; -12 MGD), the Mobile-Tensaw (03160204; -9 MGD), the Lower Tombigbee (03160203; -7 MGD) and the Mobile Bay (03160205; -6 MGD) subbasins have the largest decreases in net demand from 2010 to 2040 (figure 50).

Figure 48. Map of net water demand, 2010, in MGD.

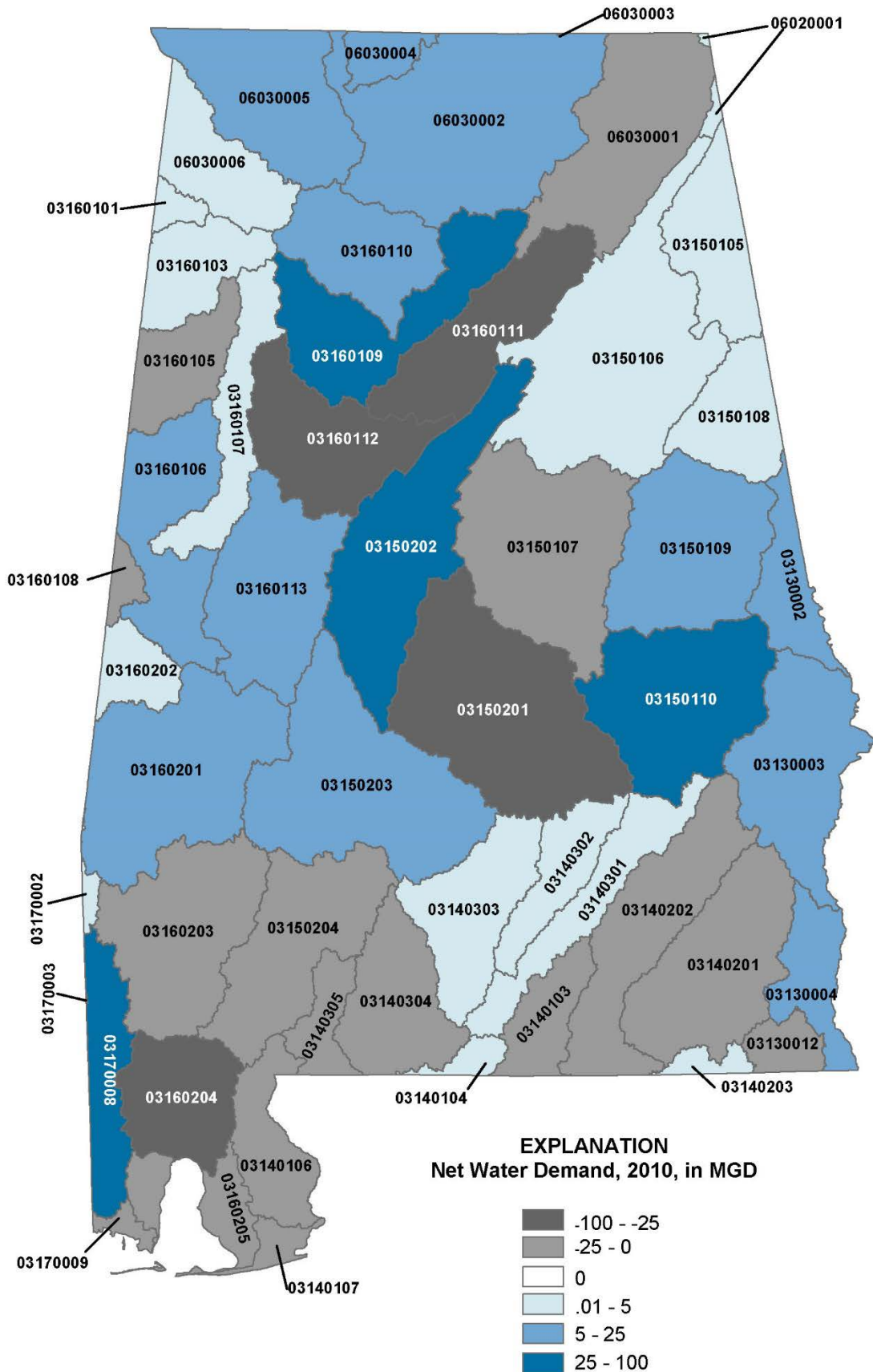


Table 39. Net water demand, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	4.57	3.09	2.56	6.69	5.84	8.03	9.14	9.17	10.96	7.20	6.59	6.76	6.72
03130003	Middle Chattahoochee-W.F. George Res.	13.24	12.57	15.20	12.83	12.52	22.95	28.99	24.41	23.35	20.95	9.33	10.86	17.27
03130004	Lower Chattahoochee	-12.24	-15.71	-11.79	-6.69	-4.82	23.86	29.08	30.23	25.09	12.30	1.99	6.34	6.47
03130012	Chipola	-2.95	-3.13	-1.44	-0.27	0.42	1.87	2.39	1.43	0.60	0.01	-0.83	-0.98	-0.24
03140103	Yellow	-2.51	-3.18	-1.69	-0.46	0.08	0.31	0.71	0.62	0.52	0.48	-0.35	-0.57	-0.50
03140104	Blackwater	0.05	0.06	0.08	0.15	0.18	0.24	0.27	0.22	0.19	0.15	0.08	0.06	0.14
03140106	Perdido	-3.83	-3.73	-2.29	0.33	0.33	1.64	2.03	0.80	1.48	0.79	-1.78	-1.48	-0.48
03140107	Perdido Bay	-5.18	-5.40	-5.15	-3.66	-3.73	-5.58	-5.55	-5.48	-4.37	-4.58	-5.39	-5.27	-4.94
03140201	Upper Choctawhatchee	-18.12	-20.86	-11.38	-4.66	-2.92	2.76	5.06	1.25	-0.39	-3.33	-7.84	-7.84	-5.69
03140202	Pea	-7.36	-6.51	-6.01	-3.63	-1.24	1.78	3.18	0.20	-1.17	-3.01	-4.48	-5.30	-2.80
03140203	Lower Choctawhatchee	0.16	0.18	0.24	0.43	0.60	0.90	1.00	0.77	0.58	0.43	0.23	0.17	0.47
03140301	Upper Conecuh	-1.63	-1.61	-1.24	0.97	2.09	4.04	4.53	3.71	2.49	2.14	0.88	0.61	1.41
03140302	Patsaliga	-0.26	-0.32	-0.23	0.21	0.51	0.89	1.06	0.79	0.49	0.26	0.18	0.10	0.31
03140303	Sepulga	-2.40	-2.47	-1.51	0.33	0.77	1.37	2.29	2.18	2.10	1.33	0.42	-0.27	0.35
03140304	Lower Conecuh	3.16	2.14	10.08	-3.72	-5.90	-1.44	-0.11	-5.69	2.51	2.37	-4.10	-5.41	-0.51
03140305	Escambia	-4.78	-5.30	-4.04	-2.51	-2.87	-1.75	-1.75	-1.78	-1.59	-1.88	-2.33	-2.67	-2.77
03150105	Upper Coosa	0.44	0.02	0.65	3.62	4.65	6.91	8.25	6.76	5.74	4.05	2.25	1.43	3.73
03150106	Middle Coosa	-25.75	-32.86	-36.83	4.59	9.14	26.17	23.51	24.41	28.23	27.72	5.36	-5.59	4.01
03150107	Lower Coosa	-20.49	-25.59	-23.29	13.42	-4.85	1.39	3.43	-1.13	1.98	-0.21	-5.12	-4.66	-5.43
03150108	Upper Tallapoosa	0.82	0.72	0.71	1.06	1.38	1.84	1.92	1.76	1.49	1.28	1.12	1.07	1.26
03150109	Middle Tallapoosa	9.13	7.35	7.33	11.76	11.79	16.07	17.89	16.57	18.58	14.07	10.55	13.14	12.85
03150110	Lower Tallapoosa	15.08	14.72	16.90	25.31	26.67	30.42	35.43	35.53	35.71	28.79	21.42	17.84	25.32
03150201	Upper Alabama	-73.05	-73.73	-72.05	-90.17	-51.19	-41.03	-54.56	-43.16	-42.45	-40.80	-46.97	-45.00	-56.18
03150202	Cahaba	21.89	9.94	15.55	35.19	34.55	36.48	46.05	42.00	46.20	39.02	29.64	24.56	31.76
03150203	Middle Alabama	9.86	7.64	12.20	16.67	16.82	19.51	20.79	20.37	13.83	17.63	15.57	11.93	15.23
03150204	Lower Alabama	-3.48	-5.27	-13.35	1.94	-0.86	0.45	1.32	-3.08	-3.09	-5.73	-6.08	-8.04	-3.77
03160101	Upper Tombigbee	0.09	0.09	0.09	0.12	0.12	0.14	0.15	0.13	0.13	0.12	0.10	0.09	0.11
03160103	Buttahatchee	0.38	-0.03	0.18	0.38	0.21	1.01	1.65	1.47	1.24	1.29	1.18	1.04	0.83
03160105	Luxapallila	1.13	0.84	-0.34	0.95	0.66	0.47	0.36	-6.38	-3.29	2.09	0.81	1.03	-0.14
03160106	Middle Tombigbee-Lubbub	8.64	8.51	8.23	9.42	10.28	10.83	11.23	10.80	10.41	10.39	9.61	9.57	9.83
03160107	Sipsey	-0.77	-0.84	-0.21	0.16	-0.36	0.68	1.22	1.06	0.98	0.71	0.02	-0.09	0.21
03160108	Noxubee	-3.26	-12.43	-10.09	-4.38	-0.01	-0.55	1.10	1.10	1.10	1.09	1.09	1.08	-2.01
03160109	Mulberry Fork	104.23	91.72	70.73	99.09	83.90	114.03	120.96	133.03	104.67	97.74	72.03	60.55	96.06
03160110	Sipsey Fork	7.16	7.32	12.10	7.81	8.31	14.00	21.91	29.66	36.83	36.29	25.35	39.18	20.49
03160111	Locust Fork	-95.20	-106.81	-108.35	-39.42	-53.36	-37.32	-16.43	-14.08	-20.60	-9.68	-23.31	-43.20	-47.31
03160112	Upper Black Warrior	-150.71	-143.78	-133.44	-113.27	-105.81	-76.27	-70.27	-70.66	-56.66	-69.35	-84.78	-88.87	-96.99
03160113	Lower Black Warrior	17.66	15.43	15.48	20.12	18.73	20.45	19.24	20.86	21.54	20.45	18.17	18.34	18.87
03160201	Middle Tombigbee-Chickasaw	7.98	4.80	13.29	16.04	13.65	18.44	11.70	10.95	14.99	16.27	13.98	17.76	13.32
03160202	Sucamoochee	0.02	-0.10	-0.27	0.82	1.28	1.54	1.19	1.09	1.53	1.21	0.25	0.55	0.76
03160203	Lower Tombigbee	-7.82	-10.74	-5.79	-5.54	-6.73	-4.44	-11.24	-13.28	-19.51	-29.25	-36.25	-25.09	-14.64
03160204	Mobile-Tensaw	-85.59	-77.08	-64.93	-48.66	-58.68	-51.23	-38.69	-44.06	-40.58	-44.49	-57.75	-44.49	-54.69
03160205	Mobile Bay	-6.82	-6.51	-4.06	0.88	0.68	2.84	5.48	3.70	3.69	1.08	-2.41	-5.01	-0.54
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	72.75	66.42	66.31	70.51	69.95	75.61	73.21	73.78	73.95	70.20	67.09	66.64	70.54
03170009	Mississippi Coastal	-1.46	-2.18	-1.23	-0.93	-0.73	-0.61	-0.50	-0.78	-0.65	-0.68	-0.88	-1.05	-0.97
06020001	Middle Tennessee-Chickamauga	0.09	0.09	0.11	0.16	0.18	0.22	0.25	0.21	0.20	0.17	0.11	0.09	0.16
06030001	Guntersville Lake	-11.58	-43.73	-13.66	-27.93	-47.51	-7.00	2.86	1.68	-0.33	-3.29	1.49	1.66	-12.28
06030002	Wheeler Lake	-25.83	-32.39	-34.67	18.00	19.69	39.08	70.00	64.40	51.01	45.27	12.03	0.64	18.93
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	8.35	8.05	8.25	9.06	10.24	12.11	13.47	12.56	10.30	8.84	7.83	7.03	9.67
06030005	Pickwick Lake	-19.95	-16.18	2.08	-3.12	8.47	15.75	22.25	19.01	23.89	21.30	13.32	10.55	8.11
06030006	Bear	-0.08	-0.59	0.09	0.86	0.70	2.46	3.17	4.07	5.62	3.88	1.22	1.53	1.91

Figure 49. Map of net water demand, 2040, in MGD.

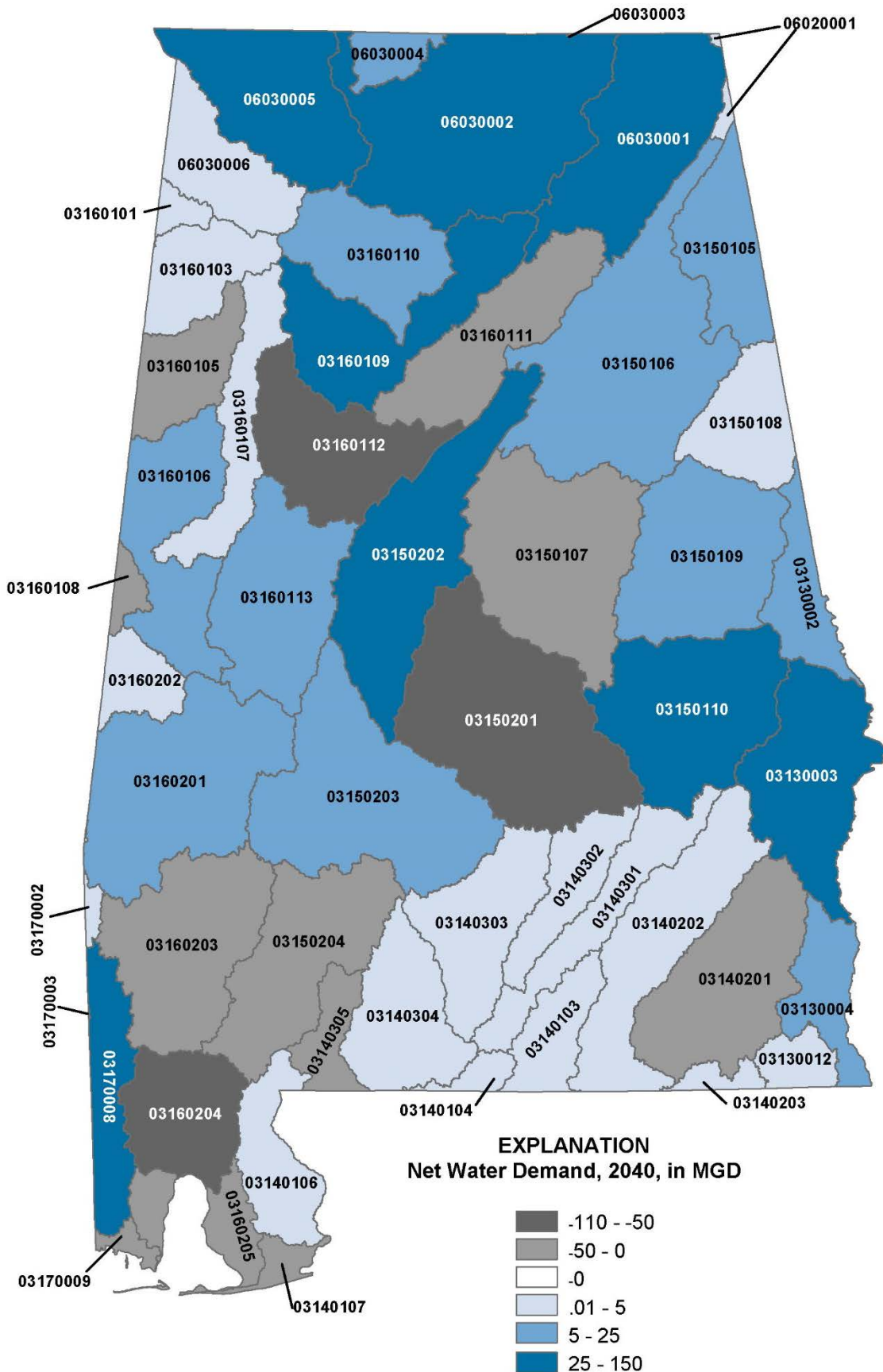


Table 40. Net water demand, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
03130002	Middle Chattahoochee-Lake Harding	5.63	3.89	3.27	7.96	6.99	9.30	10.66	10.86	12.92	8.61	8.01	8.16	8.02
03130003	Middle Chattahoochee-W.F. George Res.	14.62	14.67	18.98	21.73	28.41	52.78	63.42	49.51	38.17	30.49	13.37	13.79	29.99
03130004	Lower Chattahoochee	-13.05	-16.42	-11.70	-5.28	-2.46	27.10	32.84	32.69	26.80	13.55	2.20	6.01	7.69
03130012	Chipola	-3.77	-4.01	-1.54	0.38	1.10	2.88	3.71	2.48	1.67	0.78	-0.67	-1.11	0.16
03140103	Yellow	-2.48	-3.10	-1.40	0.28	1.49	2.75	3.51	2.63	1.67	1.16	-0.06	-0.42	0.50
03140104	Blackwater	0.05	0.06	0.09	0.18	0.28	0.45	0.50	0.38	0.26	0.18	0.09	0.06	0.22
03140106	Perdido	-4.50	-4.13	-2.10	2.07	4.07	8.90	10.24	6.41	4.33	2.29	-1.73	-1.61	2.02
03140107	Perdido Bay	-8.85	-9.20	-9.13	-6.85	-6.43	-8.96	-9.03	-9.40	-8.00	-8.33	-9.66	-8.95	-8.57
03140201	Upper Choctawhatchee	-21.95	-24.95	-12.57	-1.49	2.52	12.46	16.70	9.72	6.44	0.73	-7.99	-9.02	-2.45
03140202	Pea	-7.64	-6.39	-5.20	-0.53	3.90	10.35	12.99	7.32	3.69	0.22	-3.56	-5.12	0.83
03140203	Lower Choctawhatchee	0.24	0.32	0.49	1.04	1.63	2.62	2.95	2.20	1.50	1.04	0.45	0.28	1.23
03140301	Upper Conecuh	-1.11	-1.08	-0.78	1.86	3.54	6.39	7.06	5.83	3.54	3.10	1.61	1.46	2.62
03140302	Patsaliga	-0.23	-0.28	-0.17	0.35	0.67	1.10	1.29	0.98	0.70	0.43	0.27	0.15	0.44
03140303	Sepulga	-2.10	-2.13	-1.22	0.97	1.82	2.85	3.93	3.59	3.54	2.27	0.66	-0.03	1.18
03140304	Lower Conecuh	6.19	10.28	19.56	-5.57	-8.34	-2.36	0.46	-7.62	4.44	4.89	-5.30	-8.33	0.69
03140305	Escambia	-4.49	-4.96	-3.69	-2.01	-2.07	-0.59	-0.42	-0.81	-0.98	-1.45	-2.10	-2.55	-2.18
03150105	Upper Coosa	0.93	0.70	1.61	5.66	8.68	14.15	16.43	12.62	8.68	5.76	3.10	2.05	6.70
03150106	Middle Coosa	-28.62	-34.67	-41.22	8.82	22.86	53.41	48.24	41.85	34.04	32.86	5.59	-7.32	11.32
03150107	Lower Coosa	-30.69	-37.47	-34.11	20.35	-7.40	2.72	5.20	-2.42	0.61	-2.46	-8.62	-7.52	-8.48
03150108	Upper Tallapoosa	0.69	0.58	0.57	0.94	1.19	1.56	1.61	1.53	1.37	1.19	1.01	0.95	1.10
03150109	Middle Tallapoosa	8.88	7.10	7.14	11.39	11.15	15.03	16.78	15.71	17.88	13.59	10.34	12.86	12.32
03150110	Lower Tallapoosa	19.26	19.03	21.70	32.62	36.53	44.67	51.74	49.48	46.14	36.46	27.09	22.88	33.97
03150201	Upper Alabama	-81.28	-81.39	-79.19	-98.84	-50.47	-33.41	-45.51	-37.19	-40.64	-41.60	-51.12	-49.31	-57.50
03150202	Cahaba	26.00	11.16	17.64	40.69	39.79	41.49	52.88	48.32	53.38	45.23	34.89	29.55	36.75
03150203	Middle Alabama	10.35	9.23	13.61	20.27	24.23	32.62	35.68	30.50	20.97	20.90	15.82	12.12	20.52
03150204	Lower Alabama	-3.96	-6.12	-16.54	2.46	-1.02	0.46	1.49	-4.06	-4.12	-7.36	-7.52	-10.04	-4.69
03160101	Upper Tombigbee	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.08
03160103	Buttahatchee	0.38	0.04	0.28	0.58	0.54	1.45	2.10	1.79	1.42	1.37	1.16	0.98	1.01
03160105	Luxapallila	1.03	0.76	-0.33	1.05	0.88	0.31	0.22	-8.29	-4.45	2.09	0.74	0.93	-0.42
03160106	Middle Tombigbee-Lubbub	7.90	7.82	7.59	8.91	10.01	10.96	11.49	10.75	10.00	9.80	8.89	8.81	9.41
03160107	Sipsey	-0.81	-0.87	-0.26	0.03	-0.39	0.79	1.35	1.09	0.78	0.50	-0.07	-0.14	0.17
03160108	Noxubee	-3.29	-12.45	-10.11	-4.37	0.04	-0.44	1.23	1.18	1.14	1.10	1.07	1.05	-1.99
03160109	Mulberry Fork	138.04	124.02	95.59	133.38	109.64	152.42	161.83	184.55	143.91	134.06	94.27	85.02	129.73
03160110	Sipsey Fork	7.06	7.18	11.96	7.42	7.58	12.80	20.63	28.82	36.37	36.06	25.33	39.29	20.04
03160111	Locust Fork	-99.01	-111.28	-112.16	-40.49	-55.48	-38.98	-17.10	-14.62	-21.69	-9.96	-23.93	-44.78	-49.12
03160112	Upper Black Warrior	-151.73	-167.49	-135.86	-122.49	-122.86	-96.64	-92.49	-85.23	-61.01	-72.49	-101.67	-100.56	-109.21
03160113	Lower Black Warrior	14.62	12.27	12.46	20.59	20.67	26.41	25.70	25.19	23.14	20.13	15.67	15.38	19.35
03160201	Middle Tombigbee-Chickasaw	6.73	2.95	12.80	14.40	11.15	14.71	9.84	9.95	12.79	13.48	11.67	14.87	11.28
03160202	Sucarnoochee	1.52	1.34	1.20	2.16	2.52	2.82	2.46	2.54	2.81	2.23	1.09	1.63	2.03
03160203	Lower Tombigbee	-11.97	-15.60	-7.98	-8.19	-10.00	-6.39	-16.51	-19.38	-28.39	-42.09	-51.71	-36.30	-21.21
03160204	Mobile-Tensaw	-99.16	-85.89	-73.81	-57.85	-69.15	-60.60	-45.60	-47.36	-46.72	-54.32	-69.12	-48.75	-63.19
03160205	Mobile Bay	-22.67	-18.26	-13.69	-3.22	-4.31	3.35	9.63	3.55	0.39	-4.15	-9.70	-14.89	-6.17
03170002	Upper Chickasawhay	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	86.21	78.74	78.74	83.89	83.29	90.22	87.50	87.96	87.93	83.42	79.65	79.00	83.88
03170009	Mississippi Coastal	-1.48	-2.16	-1.20	-0.84	-0.67	-0.54	-0.39	-0.70	-0.60	-0.64	-0.84	-1.04	-0.92
06020001	Middle Tennessee-Chickamauga	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
06030001	Guntersville Lake	21.26	17.54	18.41	25.71	25.91	33.83	43.42	41.38	39.97	34.42	27.16	25.70	29.56
06030002	Wheeler Lake	-32.45	-41.97	-40.87	30.95	38.47	71.09	114.32	101.42	80.24	68.35	19.91	2.82	34.36
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	10.93	10.50	10.84	11.99	13.16	15.10	16.83	15.97	13.58	11.77	10.37	9.22	12.52
06030005	Pickwick Lake	1.37	8.36	27.86	22.00	33.79	58.92	69.61	68.19	60.48	52.52	43.31	44.07	40.87
06030006	Bear	0.17	-0.24	0.72	2.35	3.08	6.41	7.67	7.41	7.85	5.38	1.84	1.87	3.71

Figure 50. Map of net water demand comparison, 2010 to 2040, in MGD.

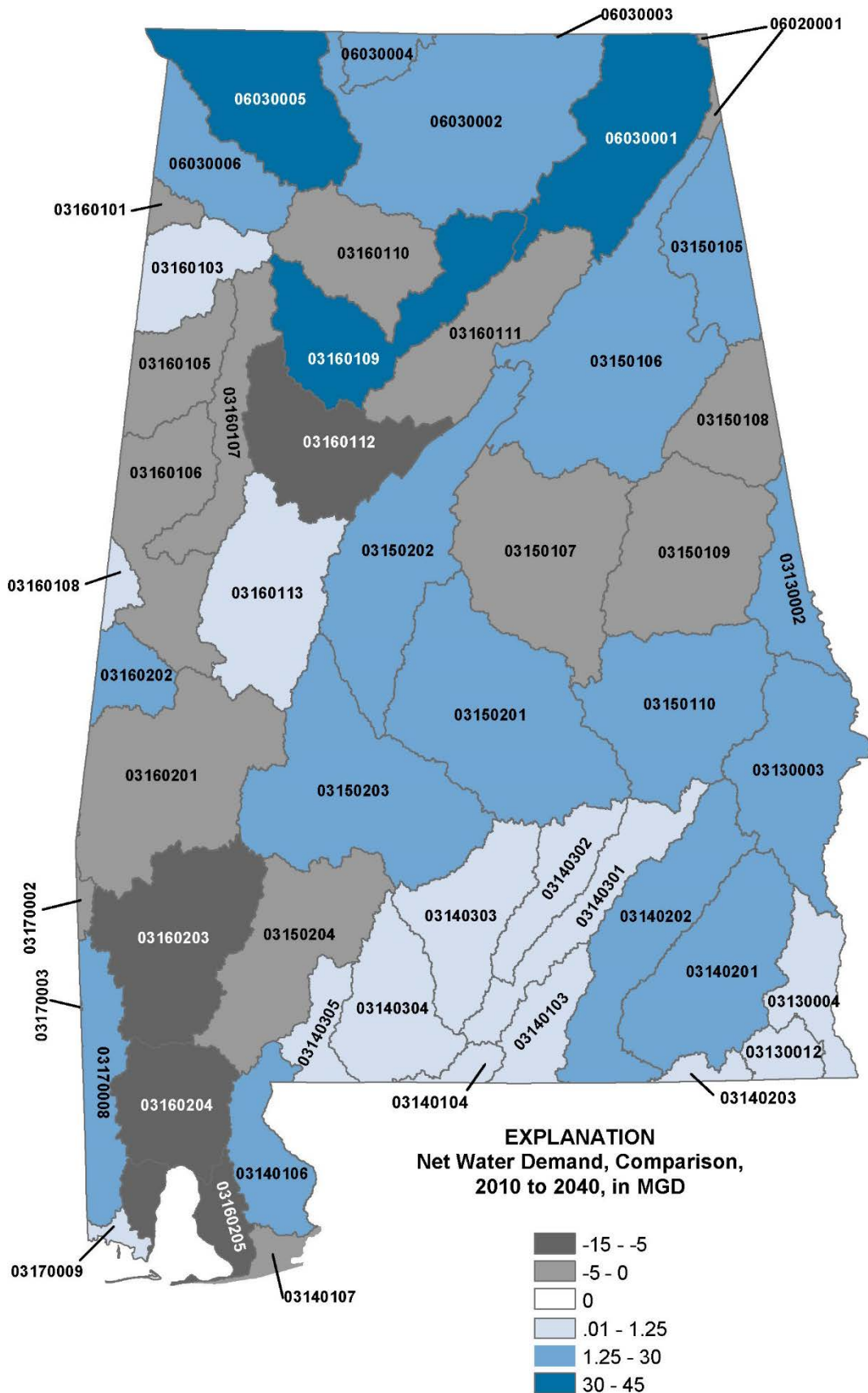


Table 41. Net water demand comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	2010 Average	2040 Average	Change in Demand	Percent Change
03130002	Middle Chattahoochee-Lake Harding	6.72	8.02	1.31	19%
03130003	Middle Chattahoochee-W.F. George Res.	17.27	29.99	12.73	74%
03130004	Lower Chattahoochee	6.47	7.69	1.22	19%
03130012	Chipola	-0.24	0.16	0.40	-166%
03140103	Yellow	-0.50	0.50	1.01	-200%
03140104	Blackwater	0.14	0.22	0.07	50%
03140106	Perdido	-0.48	2.02	2.50	-524%
03140107	Perdido Bay	-4.94	-8.57	-3.62	73%
03140201	Upper Choctawhatchee	-5.69	-2.45	3.24	-57%
03140202	Pea	-2.80	0.83	3.63	-130%
03140203	Lower Choctawhatchee	0.47	1.23	0.76	160%
03140301	Upper Conecuh	1.41	2.62	1.21	85%
03140302	Patsaliga	0.31	0.44	0.13	43%
03140303	Sepulga	0.35	1.18	0.83	242%
03140304	Lower Conecuh	-0.51	0.69	1.20	-235%
03140305	Escambia	-2.77	-2.18	0.59	-21%
03150105	Upper Coosa	3.73	6.70	2.97	80%
03150106	Middle Coosa	4.01	11.32	7.31	182%
03150107	Lower Coosa	-5.43	-8.48	-3.06	56%
03150108	Upper Tallapoosa	1.26	1.10	-0.17	-13%
03150109	Middle Tallapoosa	12.85	12.32	-0.53	-4%
03150110	Lower Tallapoosa	25.32	33.97	8.65	34%
03150201	Upper Alabama	-56.18	-57.50	-1.32	2%
03150202	Cahaba	31.76	36.75	5.00	16%
03150203	Middle Alabama	15.23	20.52	5.29	35%
03150204	Lower Alabama	-3.77	-4.69	-0.92	24%
03160101	Upper Tombigbee	0.11	0.08	-0.04	-33%
03160103	Buttahatchee	0.83	1.01	0.18	21%
03160105	Luxapallila	-0.14	-0.42	-0.28	204%
03160106	Middle Tombigbee-Lubbub	9.83	9.41	-0.42	-4%
03160107	Sipsey	0.21	0.17	-0.05	-22%
03160108	Noxubee	-2.01	-1.99	0.03	-1%
03160109	Mulberry Fork	96.06	129.73	33.67	35%
03160110	Sipsey Fork	20.49	20.04	-0.45	-2%
03160111	Locust Fork	-47.31	-49.12	-1.81	4%
03160112	Upper Black Warrior	-96.99	-109.21	-12.22	13%
03160113	Lower Black Warrior	18.87	19.35	0.48	3%
03160201	Middle Tombigbee-Chickasaw	13.32	11.28	-2.04	-15%
03160202	Sucarnoochee	0.76	2.03	1.27	167%
03160203	Lower Tombigbee	-14.64	-21.21	-6.57	45%
03160204	Mobile-Tensaw	-54.69	-63.19	-8.51	16%
03160205	Mobile Bay	-0.54	-6.17	-5.63	1045%
03170002	Upper Chickasawhay	0.01	0.01	0.00	-6%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%
03170008	Escatawpa	70.54	83.88	13.34	19%
03170009	Mississippi Coastal	-0.97	-0.92	0.05	-5%
06020001	Middle Tennessee-Chickamauga	0.16	0.07	-0.09	-56%
06030001	Guntersville Lake	-12.28	29.56	41.84	-341%
06030002	Wheeler Lake	18.93	34.36	15.42	81%
06030003	Elk	0.00	0.00	0.00	0%
06030004	Lower Elk	9.67	12.52	2.85	29%
06030005	Pickwick Lake	8.11	40.87	32.76	404%
06030006	Bear	1.91	3.71	1.80	94%

Public-Supply Net 2010 Water Demand

Public-supply net water demand is determined by subtracting the public surface-water withdrawals by the public-supply returns. Public-supply net water demands for 2010 are shown in table 42. Net water demand for 2010 for the public supply sector was estimated to be 28 MGD. The Escatawpa (03170008; 70 MGD), the Mulberry Fork (03160109; 38 MGD), the Cahaba (03150202; 24 MGD), and the Guntersville Lake (06030001; 20 MGD) subbasins had the largest public-supply net water demands for 2010. The Mobile-Tensaw (03160204; -45 MGD), the Upper Alabama (03150201; -40 MGD), the Locust Fork (03160111; -30 MGD), and the Upper Black Warrior (03160112; -29 MGD) subbasins had the lowest net demand for the public supply sector (figure 51).

Public-Supply Net 2040 Water Demand

Public-supply net water demands for 2040 are shown in table 43. Net water demand for 2040 for the public supply sector is estimated to be 45 MGD. The Escatawpa (03170008; 83 MGD), the Mulberry Fork (03160109; 40 MGD), the Cahaba (03150202; 30 MGD), the Guntersville Lake (06030001; 24 MGD) and the Lower Tallapoosa (03150110; 23 MGD) subbasins had the largest public-supply net demand for 2040. The Mobile-Tensaw (03160204; -46 MGD), the Upper Alabama (03150201; -45 MGD), the Upper Black Warrior (03160112; -32 MGD) and the Locust Fork (03160111; -31 MGD), subbasins had the lowest net demand for the public supply sector (figure 52).

Public-Supply Net Demands Comparing 2010 to 2040

The comparison of net demands from 2010 to 2040 is shown in table 44. Public-supply net water demand increased from 28 MGD in 2010 to 45 MGD in 2040, an increase of 17 MGD (61%). The Escatawpa (03170008; 13 MGD), the Cahaba (03150202; 6 MGD), and the Lower Tallapoosa (03150110; 5 MGD) have the largest increases in public-supply demand from 2010 to 2040. The Upper Alabama (03150201; -5 MGD) the Perdido Bay (03140107; -5 MGD), the Upper Black Warrior (03160112; -3 MGD), and the Upper Choctawhatchee (03140201; -3 MGD) subbasins have the largest decreases in public-supply demand from 2010 to 2040 (figure 53).

Figure 51. Map of net public supply water demand, 2010, in MGD.

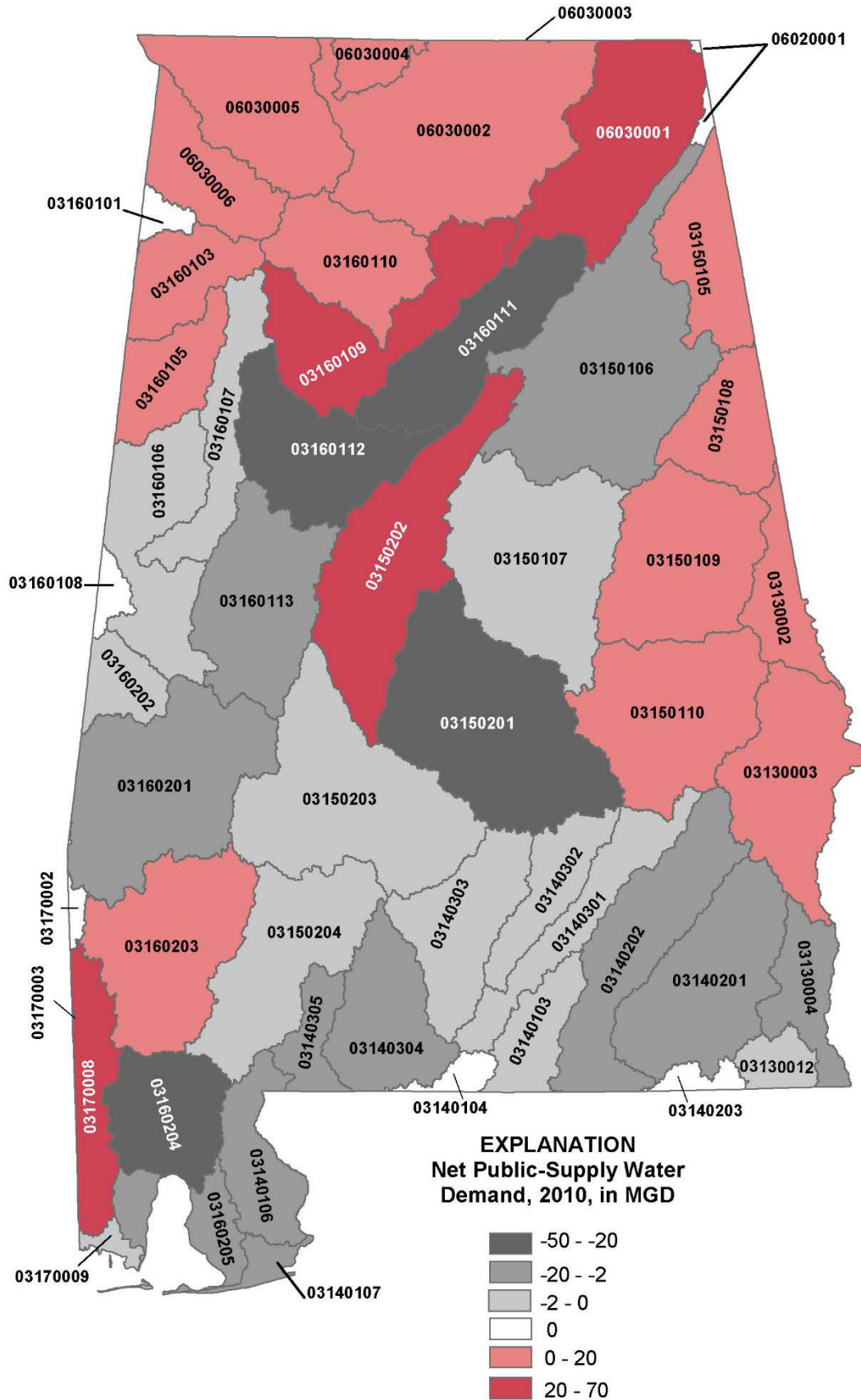


Table 42. Net public-supply water demand, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	6.31	4.86	4.43	8.00	7.79	9.05	10.59	11.12	12.50	8.99	8.44	8.25	8.36
03130003	Middle Chattahoochee-W.F. George Res.	-1.80	-2.54	-1.80	0.64	-1.08	2.86	4.98	4.56	4.72	4.02	3.52	3.41	1.79
03130004	Lower Chattahoochee	-6.79	-7.42	-5.32	-4.38	-3.85	-3.41	-3.35	-3.33	-3.23	-3.06	-3.04	-2.92	-4.18
03130012	Chipola	-3.13	-3.42	-1.84	-1.27	-1.46	-1.29	-1.19	-1.28	-1.18	-1.07	-1.19	-1.17	-1.62
03140103	Yellow	-2.80	-3.54	-2.13	-1.32	-0.97	-1.11	-0.85	-0.68	-0.67	-0.48	-0.77	-0.84	-1.35
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	-3.96	-3.97	-2.94	-1.61	-2.12	-1.67	-1.87	-2.28	-1.59	-1.55	-2.48	-1.80	-2.32
03140107	Perdido Bay	-5.36	-5.64	-5.88	-5.33	-5.62	-7.96	-8.46	-8.12	-6.86	-6.34	-6.25	-5.47	-6.44
03140201	Upper Choctawhatchee	-19.90	-22.87	-14.74	-10.79	-11.15	-10.51	-10.14	-10.73	-8.89	-8.86	-9.72	-8.81	-12.26
03140202	Pea	-7.48	-6.81	-6.84	-6.00	-5.46	-5.39	-5.16	-5.74	-5.24	-5.25	-5.23	-5.44	-5.84
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	-3.58	-3.57	-2.99	-1.83	-1.83	-1.46	-1.34	-1.51	-1.27	-1.12	-1.21	-1.65	-1.95
03140302	Patsaliga	-0.67	-0.76	-0.71	-0.42	-0.34	-0.31	-0.26	-0.26	-0.27	-0.35	-0.28	-0.32	-0.41
03140303	Sepulga	-3.26	-3.40	-3.00	-2.12	-1.90	-1.80	-1.47	-1.37	-1.21	-1.17	-1.21	-1.15	-1.92
03140304	Lower Conecuh	-3.39	-4.12	-2.96	-1.49	-3.07	-1.47	-1.73	-3.43	-1.11	-1.39	-2.26	-1.50	-2.33
03140305	Escambia	-4.74	-5.26	-4.03	-2.63	-3.10	-2.13	-2.20	-2.13	-1.87	-2.04	-2.34	-2.60	-2.92
03150105	Upper Coosa	-0.53	-1.10	-1.09	-0.02	0.11	0.74	1.25	1.05	0.44	0.00	0.39	0.30	0.13
03150106	Middle Coosa	-24.93	-36.12	-37.96	-14.11	-15.56	-4.15	5.10	7.63	11.84	8.18	1.96	-0.32	-8.20
03150107	Lower Coosa	-4.98	-9.24	-8.86	-1.53	-1.06	0.80	3.94	3.57	4.57	3.51	0.80	0.42	-0.67
03150108	Upper Tallapoosa	0.43	0.30	0.26	0.48	0.59	0.71	0.69	0.78	0.79	0.72	0.69	0.67	0.59
03150109	Middle Tallapoosa	8.36	6.44	6.17	10.25	9.72	13.57	15.04	13.99	16.14	12.18	9.18	12.05	11.09
03150110	Lower Tallapoosa	13.37	12.67	13.40	17.75	17.13	17.42	20.46	23.06	24.31	20.38	17.60	15.87	17.78
03150201	Upper Alabama	-52.20	-50.92	-46.55	-37.57	-39.91	-37.60	-36.88	-36.79	-34.66	-33.96	-36.77	-36.01	-39.98
03150202	Cahaba	18.91	7.29	12.13	26.49	26.37	24.07	32.52	30.66	33.18	29.41	25.05	22.93	24.08
03150203	Middle Alabama	-0.63	-0.64	-0.57	-0.31	-0.40	-0.45	-0.40	-0.53	-0.50	-0.30	-0.40	-0.33	-0.46
03150204	Lower Alabama	-1.20	-1.40	-1.29	-0.98	-1.27	-1.10	-1.11	-0.96	-1.17	-1.07	-0.87	-0.57	-1.08
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	0.16	-0.26	-0.07	0.04	-0.20	0.52	1.12	0.98	0.75	0.90	0.92	0.82	0.47
03160105	Luxapallila	0.80	0.64	0.50	0.92	0.73	1.34	1.45	1.52	1.64	1.51	1.10	0.86	1.09
03160106	Middle Tombigbee-Lubbub	-1.42	-1.56	-1.73	-1.01	-0.62	-0.44	-0.30	-0.40	-0.60	-0.28	-0.61	-0.61	-0.80
03160107	Sipsey	-1.85	-1.95	-1.45	-1.44	-2.15	-1.44	-1.14	-1.04	-1.04	-1.04	-1.25	-1.20	-1.42
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	47.04	36.13	27.94	40.32	40.75	48.86	51.60	43.20	35.92	34.31	34.61	17.11	38.15
03160110	Sipsey Fork	6.34	6.44	11.10	6.33	6.34	11.28	18.91	27.19	34.80	34.72	24.35	38.34	18.85
03160111	Locust Fork	-68.36	-80.07	-80.73	-23.02	-42.32	-24.84	-8.62	-1.12	-1.31	1.31	-10.64	-19.01	-29.89
03160112	Upper Black Warrior	-52.75	-67.04	-66.46	-42.81	-38.93	-19.07	-10.36	-9.52	-3.50	-5.76	-14.92	-19.09	-29.18
03160113	Lower Black Warrior	-5.25	-7.36	-6.50	-5.39	-5.63	-4.37	-4.65	-3.79	-3.71	-3.72	-4.71	-4.25	-4.94
03160201	Middle Tombigbee-Chickasaw	-3.99	-4.36	-3.16	-1.78	-2.14	-1.51	-1.62	-1.75	-1.06	-1.08	-3.38	-1.99	-2.32
03160202	Sucarnoochee	-1.88	-1.94	-2.11	-1.11	-0.70	-0.57	-0.89	-1.14	-0.62	-0.52	-0.95	-1.01	-1.12
03160203	Lower Tombigbee	1.77	0.90	-0.28	0.73	0.98	0.31	1.31	1.29	1.70	1.67	1.29	1.80	1.12
03160204	Mobile-Tensaw	-63.08	-63.39	-52.29	-38.26	-47.08	-43.75	-37.00	-47.36	-37.82	-33.11	-40.65	-38.52	-45.19
03160205	Mobile Bay	-2.99	-3.14	-2.84	-2.31	-2.43	-2.58	-2.35	-2.66	-2.37	-2.28	-2.35	-2.31	-2.55
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	72.63	66.27	66.09	69.95	69.09	74.35	71.77	72.55	72.84	69.47	66.84	66.51	69.86
03170009	Mississippi Coastal	-1.18	-1.13	-1.08	-0.89	-0.96	-0.98	-0.99	-1.17	-0.98	-0.81	-0.76	-0.71	-0.97
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	16.28	12.41	12.80	17.14	16.70	21.50	27.35	26.99	26.74	24.03	20.43	19.49	20.15
06030002	Wheeler Lake	-19.73	-34.91	-25.34	0.06	8.45	20.61	42.74	42.72	41.26	33.48	10.83	0.58	10.06
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	7.81	7.38	7.42	7.59	7.78	8.09	8.98	9.20	8.18	7.41	7.10	6.46	7.78
06030005	Pickwick Lake	-9.22	-10.77	3.52	-7.89	5.20	9.03	11.77	12.77	13.04	11.63	8.26	8.59	4.66
06030006	Bear	2.96	1.58	2.15	3.08	2.55	3.57	5.04	5.79	6.51	5.41	4.75	4.19	3.96

Figure 52. Map of net public-supply water demand, 2040, in MGD.

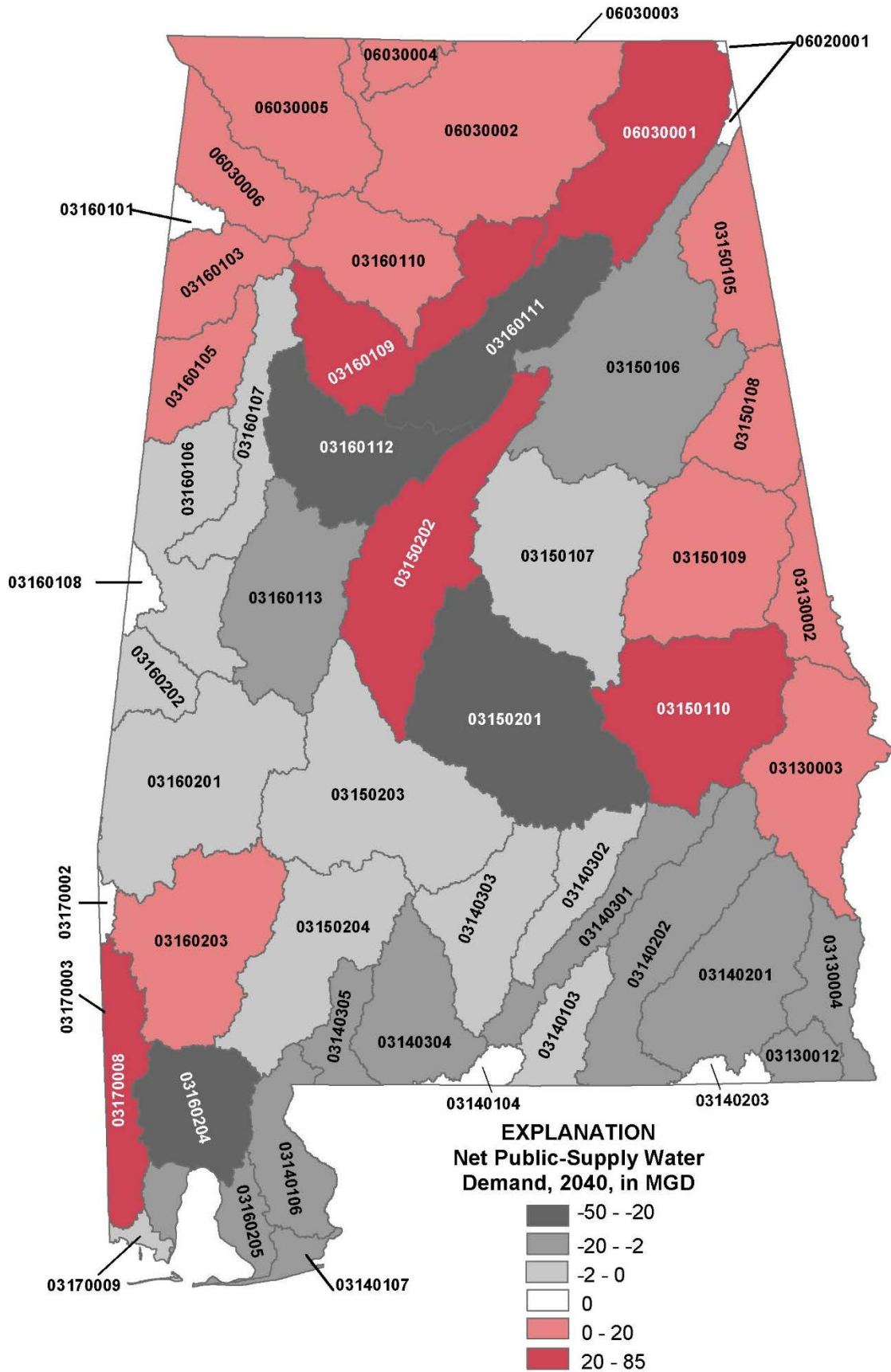


Table 43. Net public-supply water demand, 2040, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	7.41	5.72	5.21	9.40	9.16	10.64	12.45	13.07	14.70	10.56	9.92	9.70	9.83
03130003	Middle Chattahoochee-W.F. George Res.	-2.43	-3.43	-2.44	0.86	-1.46	3.86	6.72	6.17	6.38	5.43	4.76	4.61	2.42
03130004	Lower Chattahoochee	-8.17	-8.93	-6.41	-5.27	-4.63	-4.11	-4.03	-4.00	-3.89	-3.69	-3.66	-3.51	-5.02
03130012	Chipola	-4.11	-4.49	-2.42	-1.67	-1.91	-1.70	-1.56	-1.68	-1.55	-1.41	-1.57	-1.54	-2.13
03140103	Yellow	-2.89	-3.65	-2.19	-1.36	-1.00	-1.15	-0.87	-0.70	-0.69	-0.49	-0.79	-0.87	-1.39
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	-4.86	-4.87	-3.61	-1.98	-2.60	-2.04	-2.30	-2.80	-1.95	-1.90	-3.05	-2.21	-2.85
03140107	Perdido Bay	-9.10	-9.58	-10.00	-9.05	-9.55	-13.52	-14.37	-13.80	-11.66	-10.77	-10.62	-9.30	-10.94
03140201	Upper Choctawhatchee	-24.10	-27.69	-17.85	-13.07	-13.51	-12.73	-12.28	-13.00	-10.76	-10.72	-11.77	-10.66	-14.84
03140202	Pea	-8.48	-7.72	-7.76	-6.80	-6.19	-6.11	-5.85	-6.51	-5.94	-5.95	-5.93	-6.16	-6.62
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140301	Upper Conecuh	-3.88	-3.87	-3.24	-1.98	-1.98	-1.58	-1.45	-1.63	-1.38	-1.22	-1.31	-1.79	-2.11
03140302	Patsaliga	-0.70	-0.79	-0.75	-0.44	-0.36	-0.33	-0.27	-0.27	-0.28	-0.36	-0.29	-0.34	-0.43
03140303	Sepulga	-3.03	-3.16	-2.79	-1.97	-1.77	-1.68	-1.37	-1.27	-1.13	-1.09	-1.12	-1.07	-1.79
03140304	Lower Conecuh	-3.13	-3.80	-2.73	-1.37	-2.84	-1.35	-1.60	-3.17	-1.02	-1.28	-2.09	-1.38	-2.15
03140305	Escambia	-4.41	-4.89	-3.75	-2.45	-2.88	-1.98	-2.04	-1.98	-1.74	-1.90	-2.18	-2.43	-2.72
03150105	Upper Coosa	-0.59	-1.22	-1.21	-0.02	0.13	0.82	1.39	1.17	0.49	0.00	0.43	0.33	0.14
03150106	Middle Coosa	-28.14	-40.77	-42.84	-15.93	-17.56	-4.68	5.76	8.62	13.37	9.23	2.21	-0.36	-9.26
03150107	Lower Coosa	-6.50	-12.05	-11.55	-2.00	-1.38	1.04	5.14	4.66	5.96	4.58	1.04	0.54	-0.88
03150108	Upper Tallapoosa	0.44	0.32	0.27	0.50	0.62	0.74	0.71	0.82	0.82	0.75	0.72	0.70	0.62
03150109	Middle Tallapoosa	8.26	6.36	6.09	10.13	9.60	13.40	14.85	13.81	15.94	12.03	9.07	11.90	10.95
03150110	Lower Tallapoosa	17.30	16.40	17.34	22.96	22.16	22.53	26.47	29.84	31.45	26.37	22.77	20.54	23.01
03150201	Upper Alabama	-58.58	-57.15	-52.24	-42.17	-44.79	-42.19	-41.39	-41.29	-38.89	-38.11	-41.26	-40.42	-44.87
03150202	Cahaba	23.42	9.02	15.03	32.80	32.66	29.82	40.28	37.97	41.09	36.42	31.02	28.40	29.83
03150203	Middle Alabama	-0.52	-0.52	-0.47	-0.25	-0.33	-0.37	-0.33	-0.44	-0.41	-0.25	-0.33	-0.28	-0.37
03150204	Lower Alabama	-1.02	-1.19	-1.09	-0.83	-1.07	-0.93	-0.94	-0.81	-0.99	-0.90	-0.74	-0.48	-0.92
03160101	Upper Tombigbee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160103	Buttahatchee	0.14	-0.23	-0.06	0.03	-0.18	0.46	0.99	0.87	0.66	0.80	0.82	0.73	0.42
03160105	Luxapallila	0.69	0.56	0.44	0.80	0.64	1.16	1.26	1.32	1.42	1.31	0.96	0.75	0.94
03160106	Middle Tombigbee-Lubbub	-1.35	-1.48	-1.64	-0.96	-0.59	-0.41	-0.29	-0.38	-0.57	-0.26	-0.58	-0.58	-0.76
03160107	Sipsey	-1.84	-1.93	-1.44	-1.43	-2.13	-1.43	-1.13	-1.03	-1.03	-1.03	-1.24	-1.19	-1.40
03160108	Noxubee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03160109	Mulberry Fork	49.88	38.31	29.62	42.75	43.21	51.80	54.71	45.80	38.09	36.38	36.70	18.14	40.45
03160110	Sipsey Fork	6.38	6.48	11.17	6.37	6.38	11.36	19.04	27.38	35.04	34.96	24.52	38.60	18.98
03160111	Locust Fork	-70.87	-83.01	-83.70	-23.86	-43.87	-25.75	-8.94	-1.16	-1.36	1.36	-11.03	-19.71	-30.99
03160112	Upper Black Warrior	-57.64	-73.26	-72.63	-46.78	-42.54	-20.84	-11.32	-10.41	-3.82	-6.29	-16.30	-20.86	-31.89
03160113	Lower Black Warrior	-6.13	-8.59	-7.58	-6.29	-6.57	-5.10	-5.43	-4.43	-4.33	-4.34	-5.50	-4.96	-5.77
03160201	Middle Tombigbee-Chickasaw	-3.26	-3.56	-2.59	-1.45	-1.75	-1.23	-1.33	-1.43	-0.87	-0.88	-2.77	-1.63	-1.89
03160202	Sucarnoochee	-1.60	-1.67	-1.81	-0.94	-0.60	-0.49	-0.76	-0.97	-0.53	-0.44	-0.82	-0.87	-0.96
03160203	Lower Tombigbee	1.53	0.77	-0.24	0.63	0.85	0.27	1.13	1.12	1.47	1.44	1.11	1.56	0.97
03160204	Mobile-Tensaw	-63.59	-63.92	-52.72	-38.58	-47.47	-44.11	-37.30	-47.76	-38.13	-33.38	-40.98	-38.84	-45.56
03160205	Mobile Bay	-3.47	-3.65	-3.30	-2.68	-2.82	-2.99	-2.73	-3.09	-2.75	-2.64	-2.73	-2.68	-2.96
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	86.03	78.50	78.29	82.86	81.84	88.07	85.01	85.94	86.29	82.29	79.18	78.78	82.76
03170009	Mississippi Coastal	-1.23	-1.18	-1.13	-0.93	-1.00	-1.02	-1.03	-1.22	-1.02	-0.84	-0.80	-0.74	-1.01
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	19.12	14.57	15.03	20.12	19.60	25.24	32.10	31.68	31.39	28.21	23.98	22.88	23.66
06030002	Wheeler Lake	-26.52	-46.92	-34.05	0.09	11.36	27.70	57.44	57.41	55.45	45.00	14.55	0.77	13.52
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	10.30	9.73	9.78	10.01	10.26	10.67	11.84	12.13	10.79	9.77	9.36	8.52	10.26
06030005	Pickwick Lake	-9.37	-10.95	3.58	-8.02	5.29	9.18	11.97	12.98	13.25	11.82	8.39	8.74	4.74
06030006	Bear	3.02	1.61	2.20	3.15	2.61	3.65	5.15	5.91	6.66	5.53	4.85	4.28	4.05

Figure 53. Map of net public-supply water demand comparison, 2010 to 2040, in MGD.

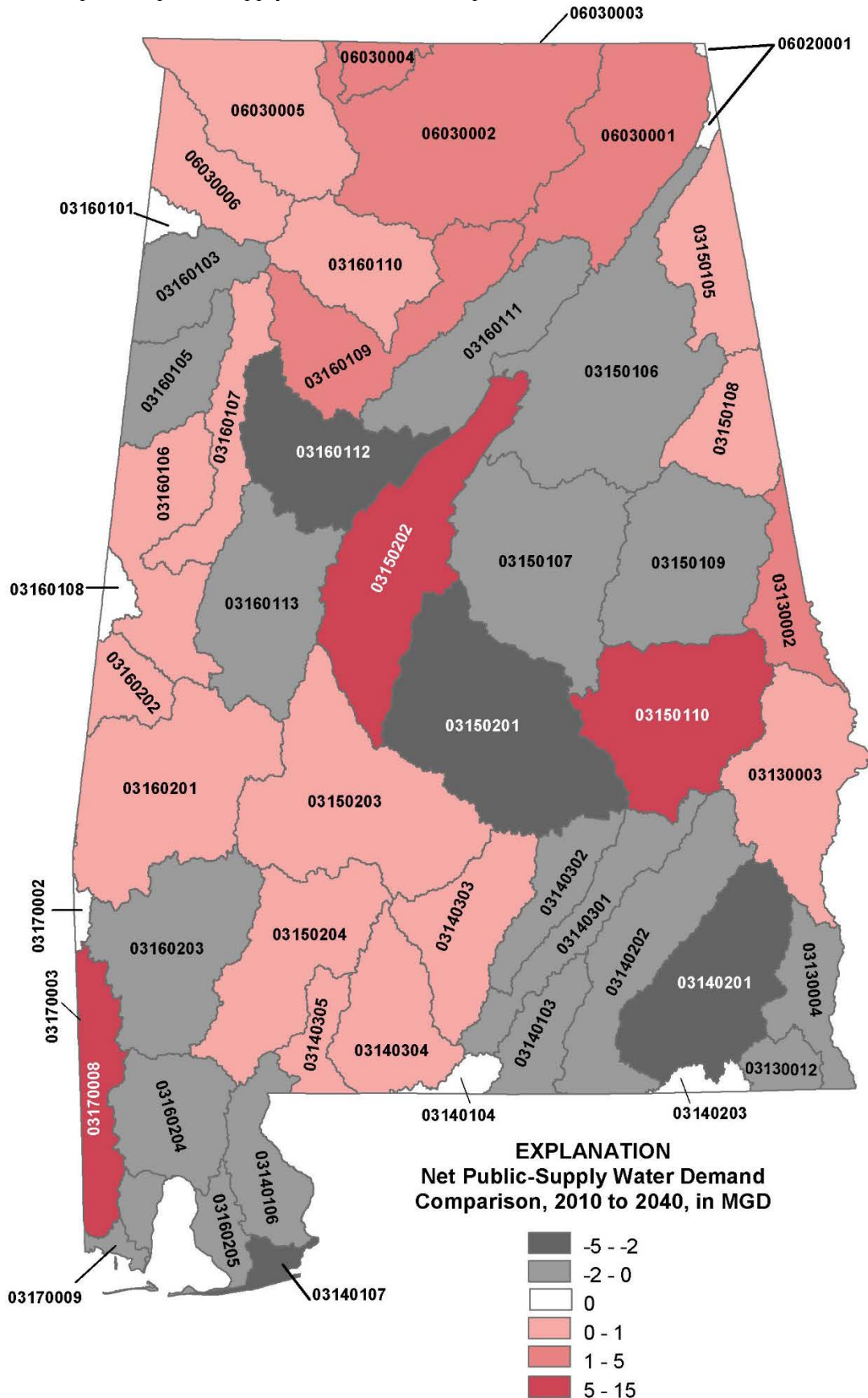


Table 44. Net public-supply water demand comparison, 2010 to 2040, in MGD

Subbasin	Subbasin Name	2010 Average	2040 Average	Change in Demand	Percent Change
03130002	Middle Chattahoochee-Lake Harding	8.36	9.83	1.47	18%
03130003	Middle Chattahoochee-W.F. George Res.	1.79	2.42	0.63	35%
03130004	Lower Chattahoochee	-4.18	-5.02	-0.85	20%
03130012	Chipola	-1.62	-2.13	-0.51	31%
03140103	Yellow	-1.35	-1.39	-0.04	3%
03140104	Blackwater	0.00	0.00	0.00	0%
03140106	Perdido	-2.32	-2.85	-0.53	23%
03140107	Perdido Bay	-6.44	-10.94	-4.50	70%
03140201	Upper Choctawhatchee	-12.26	-14.84	-2.59	21%
03140202	Pea	-5.84	-6.62	-0.78	13%
03140203	Lower Choctawhatchee	0.00	0.00	0.00	0%
03140301	Upper Conecuh	-1.95	-2.11	-0.16	8%
03140302	Patsaliga	-0.41	-0.43	-0.02	4%
03140303	Sepulga	-1.92	-1.79	0.13	-7%
03140304	Lower Conecuh	-2.33	-2.15	0.18	-8%
03140305	Escambia	-2.92	-2.72	0.20	-7%
03150105	Upper Coosa	0.13	0.14	0.01	11%
03150106	Middle Coosa	-8.20	-9.26	-1.06	13%
03150107	Lower Coosa	-0.67	-0.88	-0.20	30%
03150108	Upper Tallapoosa	0.59	0.62	0.02	4%
03150109	Middle Tallapoosa	11.09	10.95	-0.14	-1%
03150110	Lower Tallapoosa	17.78	23.01	5.23	29%
03150201	Upper Alabama	-39.98	-44.87	-4.89	12%
03150202	Cahaba	24.08	29.83	5.74	24%
03150203	Middle Alabama	-0.46	-0.37	0.08	-18%
03150204	Lower Alabama	-1.08	-0.92	0.17	-15%
03160101	Upper Tombigbee	0.00	0.00	0.00	0%
03160103	Buttahaatchee	0.47	0.42	-0.05	-11%
03160105	Luxapallila	1.09	0.94	-0.15	-13%
03160106	Middle Tombigbee-Lubbub	-0.80	-0.76	0.04	-5%
03160107	Sipsey	-1.42	-1.40	0.01	-1%
03160108	Noxubee	0.00	0.00	0.00	0%
03160109	Mulberry Fork	38.15	40.45	2.30	6%
03160110	Sipsey Fork	18.85	18.98	0.13	1%
03160111	Locust Fork	-29.89	-30.99	-1.10	4%
03160112	Upper Black Warrior	-29.18	-31.89	-2.71	9%
03160113	Lower Black Warrior	-4.94	-5.77	-0.83	17%
03160201	Middle Tombigbee-Chickasaw	-2.32	-1.89	0.42	-18%
03160202	Sucarnoochee	-1.12	-0.96	0.16	-14%
03160203	Lower Tombigbee	1.12	0.97	-0.15	-14%
03160204	Mobile-Tensaw	-45.19	-45.56	-0.37	1%
03160205	Mobile Bay	-2.55	-2.96	-0.41	16%
03170002	Upper Chickasawhay	0.00	0.00	0.00	0%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%
03170008	Escatawpa	69.86	82.76	12.90	18%
03170009	Mississippi Coastal	-0.97	-1.01	-0.04	4%
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0%
06030001	Guntersville Lake	20.15	23.66	3.51	17%
06030002	Wheeler Lake	10.06	13.52	3.46	34%
06030003	Elk	0.00	0.00	0.00	0%
06030004	Lower Elk	7.78	10.26	2.48	32%
06030005	Pickwick Lake	4.66	4.74	0.08	2%
06030006	Bear	3.96	4.05	0.09	2%

Agriculture Net Water Demands

Agriculture net water demands for both 2010 and 2040 are the same as agriculture surface-water withdrawal estimates for those years since the assumption for this water use sector is that there are no return water flows from agricultural operations. This is based on OWR experience with the agriculture water use reporting data as well as providing a more conservative estimate since any returns would be additive back to the state's water resources.

Agriculture Net 2010 Water Demand

The agriculture surface-water withdrawal tables are provided in table 17 for 2010. Total statewide agriculture surface-water withdrawals for 2010 were estimated to be 191 MGD which accounted for approximately 67 percent of the total withdrawal (287 MGD) (figure 54). The Agriculture Withdrawals - 2010 section of this report contains additional details.

Agriculture Net 2040 Water Demand

The agriculture surface-water withdrawal tables are provided in table 20 for 2040. Total statewide agriculture surface-water withdrawals for 2040 were projected to increase to 275 MGD which comprised approximately 59 percent of the total from surface-water withdrawals (463 MGD) (figure 55). The Agriculture Withdrawals - 2040 section of this report contains additional details.

Agriculture Net Demands Comparing 2010 to 2040

Agriculture net water demands are projected to increase from 191 MGD in 2010 to 275 MGD in 2040, an increase of 84 MGD (44%). The Wheeler Lake (06030002; 12 MGD) and the Middle Chattahoochee-W.F. George Reservoir (03130003; 12 MGD) subbasins have the largest increases in net water demands. The Mobile-Tensaw (03160204; -1 MGD), and the Upper Black Warrior (03160112; -1 MGD) subbasins have the largest decreases in net water demands from 2010 to 2040 (figure 56).

Figure 54. Map of net agriculture water demand, 2010, in MGD.

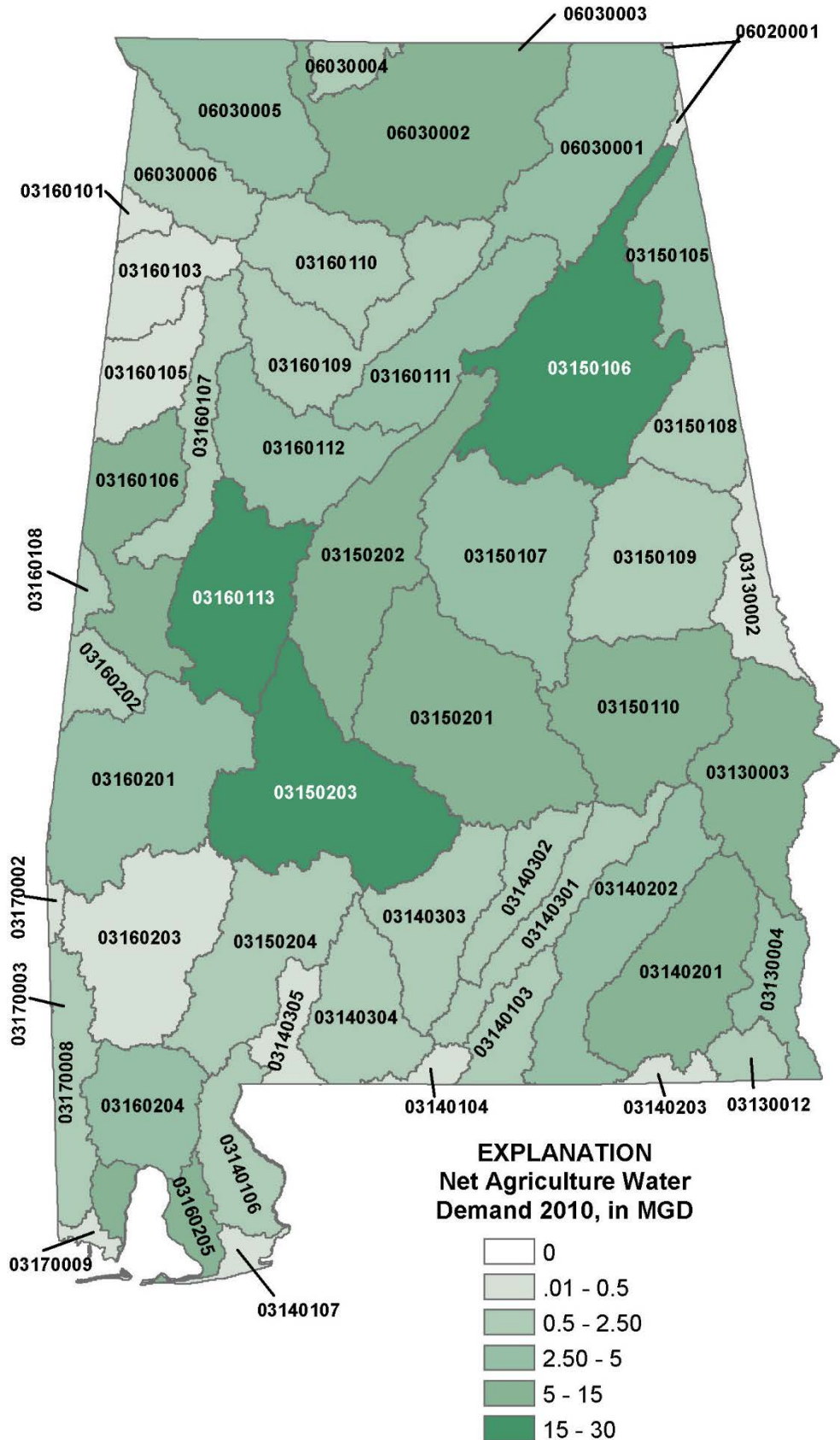


Figure 55. Map of net agriculture water demand, 2040, in MGD.

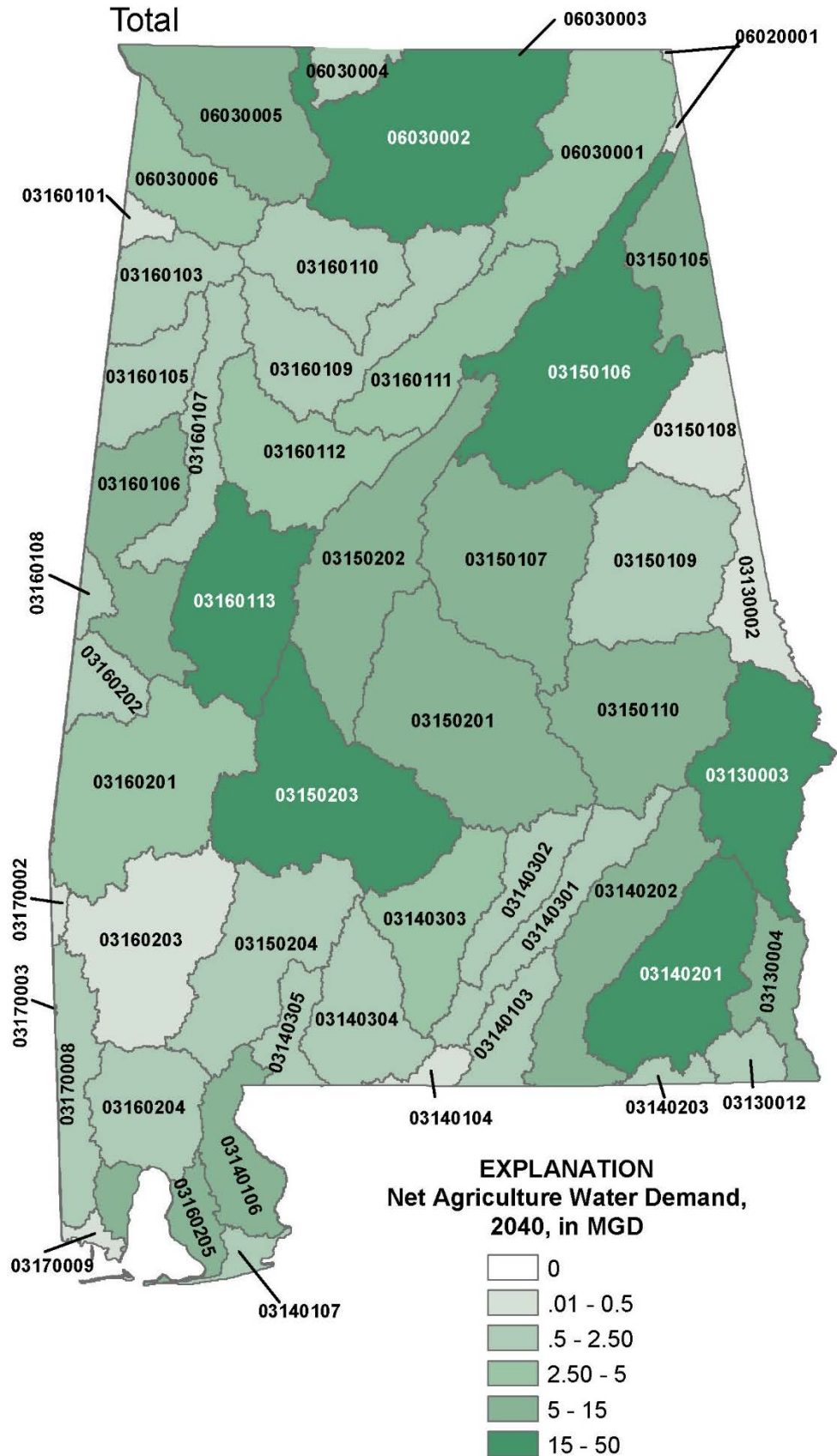
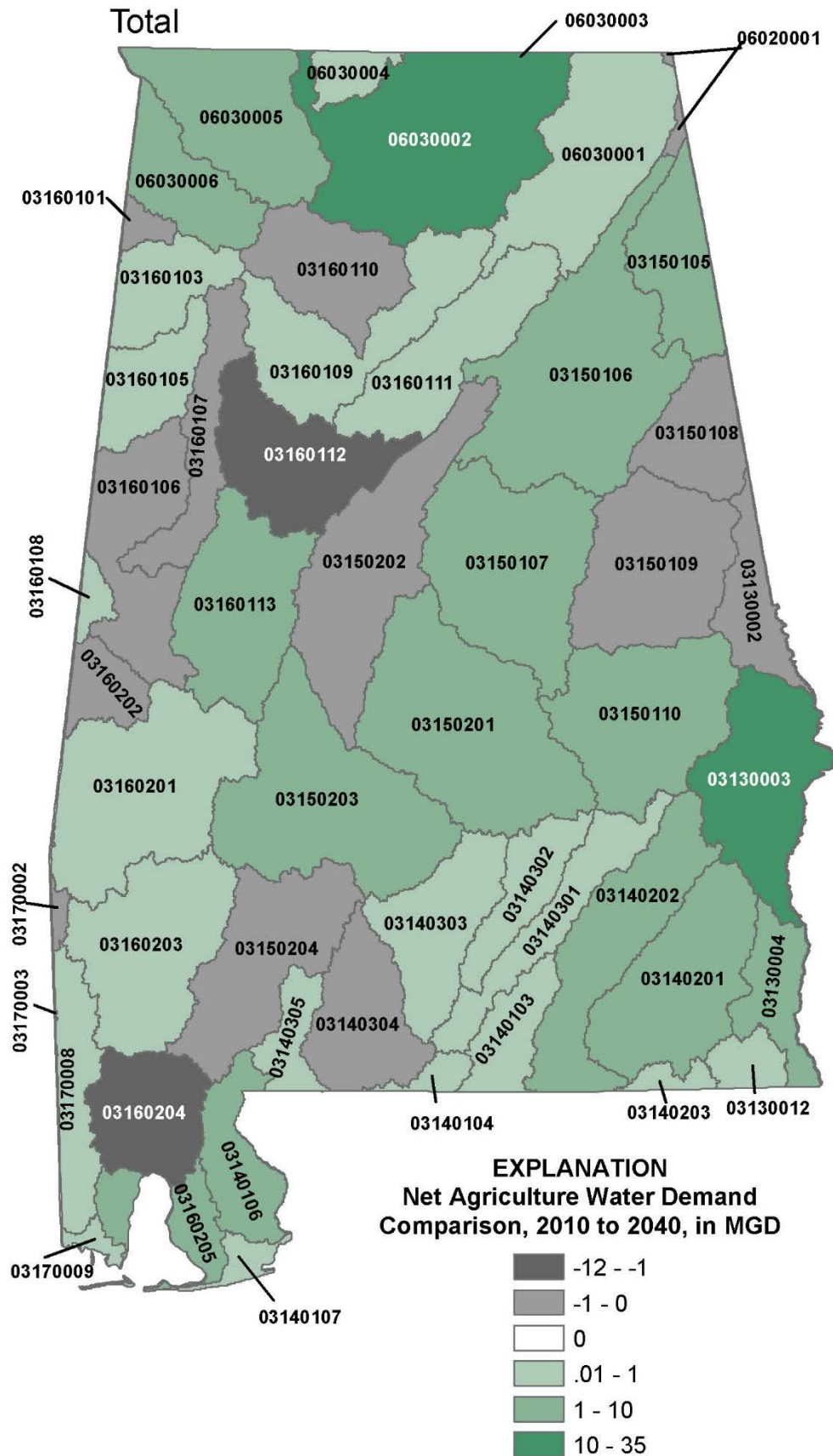


Figure 56. Map of net agriculture water demand comparison, 2010 to 2040, in MGD.



Industrial, Thermoelectric, and Mining Net Demand, 2010

Industrial, thermoelectric, and mining water demand is determined by subtracting the industrial, thermoelectric, and mining surface-water withdrawals by the industrial, thermoelectric, and mining returns. Net water demand for 2010 for the industrial, thermoelectric, and mining sector was estimated to be -137 MGD (table 45). The Mulberry Fork (03160109; 56 MGD) and the Middle Tombigbee-Chickasaw (03160201; 13 MGD), subbasins had the largest industrial, thermoelectric, and mining net demand for 2010. The Upper Black Warrior (03160112; -72 MGD), the Guntersville Lake (06030001; -37 MGD), the Upper Alabama (03150201; -23 MGD) and the Locust Fork (03160111; -20 MGD) subbasins had the lowest net demand for the industrial, thermoelectric, and mining sector (figure 57).

Industrial, Thermoelectric, and Mining Net Demand, 2040

Industrial, thermoelectric, and mining water demand is determined by subtracting the industrial, thermoelectric, and mining surface-water withdrawals by the industrial, thermoelectric, and mining returns. Net water demand for 2040 for the industrial, thermoelectric, and mining sector was estimated to be -80 MGD. The Mulberry Fork (03160109; 87 MGD), the Pickwick Lake (06030005; 26 MGD), and the Middle Tombigbee-Chickasaw (03160201; 11 MGD) subbasins have the largest industrial, thermoelectric, and mining net demand for 2040. The Upper Black Warrior (03160112; -80 MGD), the Upper Alabama (03150201; -26 MGD), the Lower Tombigbee (03160203; -22 MGD) and the Locust Fork (03160111; -21 MGD) subbasins had the lowest net demand for the industrial, thermoelectric, and mining sector (figure 58).

Industrial, Thermoelectric, and Mining Net Demands Comparing 2010 to 2040

The comparison of net demands from 2010 to 2040 for the industrial, thermoelectric, and mining sector is shown in table 47. Industrial, thermoelectric, and mining net demand increased from -137 MGD in 2010 to -80 MGD in 2040, an increase of 57 MGD (42%). The Guntersville Lake (06030001; 38 MGD), the Mulberry Fork (03160109; 32 MGD) and the Pickwick Lake (06030005; 27 MGD) have the largest increases in industrial, thermoelectric, and mining demand from 2010 to 2040. The Mobile Bay (03160205; -10 MGD), The Upper Black Warrior (03160112; -8 MGD), the Lower Tombigbee (03160203; -6 MGD), the Mobile-Tensaw (03160204; -6 MGD), and the Lower Coosa (03150107; -5 MGD) subbasins have the largest decreases in industrial, thermoelectric, and mining demand from 2010 to 2040 (figure 59).

Figure 57. Map of net industrial, thermoelectric, and mining demand, 2010, in MGD.

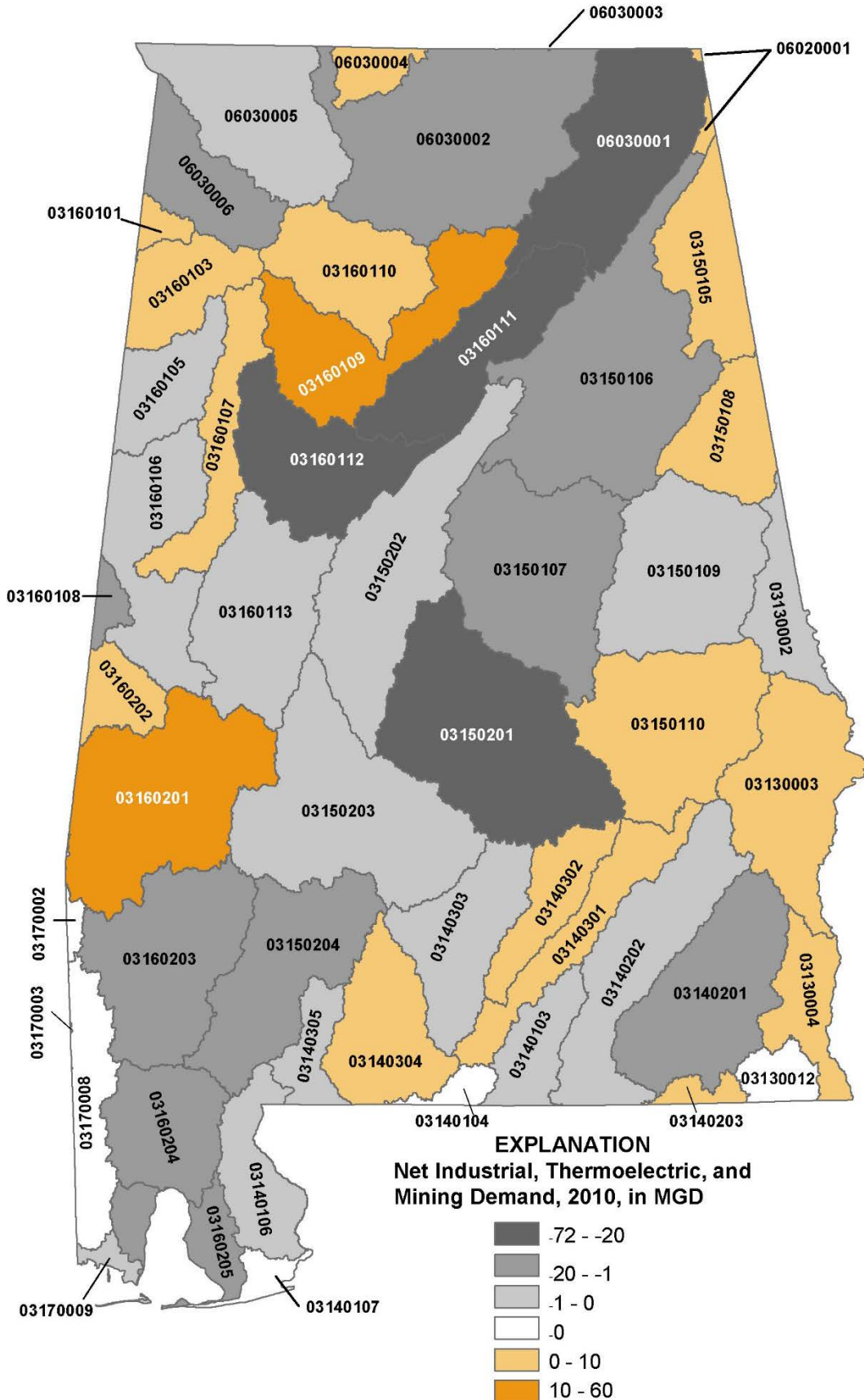


Table 45. Net industrial, thermoelectric, and mining water demand, 2010, in MGD.

Subbasin	Subbasin Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG
03130002	Middle Chattahoochee-Lake Harding	-1.89	-1.95	-2.11	-1.75	-2.56	-1.87	-2.41	-2.74	-2.24	-2.29	-2.10	-1.66	-2.13
03130003	Middle Chattahoochee-W.F. George Res.	13.30	12.94	13.17	3.29	2.22	4.21	5.89	5.36	5.47	7.04	1.69	5.27	6.66
03130004	Lower Chattahoochee	-5.93	-8.99	-7.51	-4.61	-5.01	20.45	24.74	27.93	24.84	13.12	4.14	8.71	7.76
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	-0.12	-0.08	-0.15	-0.18	-0.19	-0.18	-0.24	-0.22	-0.27	-0.20	-0.21	-0.17	-0.18
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	-0.35	-0.33	-0.35	-0.41	-0.39	-0.46	-0.42	-0.46	-0.42	-0.32	-0.42	-0.28	-0.38
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	-2.84	-3.04	-2.76	-3.07	-4.09	-4.05	-4.15	-3.97	-3.90	-3.84	-4.18	-3.74	-3.64
03140202	Pea	-0.97	-1.03	-0.92	-0.93	-0.92	-0.94	-0.75	-0.97	-0.71	-1.10	-0.88	-1.04	-0.93
03140203	Lower Choctawhatchee	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03140301	Upper Conecuh	1.40	1.34	0.90	1.15	1.66	2.31	2.28	2.28	1.23	1.41	1.21	1.66	1.58
03140302	Patsaliga	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03140303	Sepulga	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
03140304	Lower Conecuh	6.25	5.94	12.66	-2.88	-3.71	-1.16	0.30	-3.40	2.59	3.00	-2.24	-4.21	1.10
03140305	Escambia	-0.09	-0.11	-0.10	-0.11	-0.10	-0.09	-0.09	-0.10	-0.12	-0.12	-0.09	-0.12	-0.10
03150105	Upper Coosa	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03150106	Middle Coosa	-5.03	-1.75	-7.82	-0.96	1.12	-0.89	-17.54	-13.16	-12.27	-2.24	-6.47	-10.36	-6.37
03150107	Lower Coosa	-16.32	-17.31	-16.04	11.34	-8.38	-5.60	-7.64	-10.73	-8.30	-7.90	-7.73	-6.00	-7.59
03150108	Upper Tallapoosa	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03150109	Middle Tallapoosa	-0.41	-0.32	-0.16	-0.32	-0.20	-0.36	-0.27	-0.20	-0.13	-0.15	0.00	-0.11	-0.22
03150110	Lower Tallapoosa	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
03150201	Upper Alabama	-22.74	-25.03	-29.04	-59.74	-20.44	-16.09	-32.23	-18.50	-18.36	-14.55	-13.98	-11.07	-23.47
03150202	Cahaba	0.06	-0.52	-1.30	0.24	-1.72	0.23	-0.65	-1.72	0.23	0.11	-0.69	-1.39	-0.59
03150203	Middle Alabama	-3.51	-5.89	-1.83	0.98	0.20	1.12	1.65	2.78	-2.76	1.83	1.38	-1.86	-0.49
03150204	Lower Alabama	-2.47	-4.09	-12.40	2.18	-0.49	0.37	1.08	-3.24	-3.03	-5.51	-5.59	-7.69	-3.41
03160101	Upper Tombigbee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160103	Buttahatchee	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03160105	Luxapallila	0.22	0.07	-1.00	-0.26	-0.50	-1.47	-1.77	-8.47	-5.41	0.24	-0.45	0.05	-1.56
03160106	Middle Tombigbee-Lubbub	-0.24	-0.26	-0.50	-0.39	-0.19	-0.26	-0.18	-0.19	-0.18	-0.23	-0.24	-0.13	-0.25
03160107	Sipsey	0.60	0.60	0.60	0.56	0.54	0.54	0.60	0.60	0.59	0.60	0.60	0.60	0.59
03160108	Noxubee	-4.29	-13.46	-11.13	-5.42	-1.05	-1.60	0.05	0.05	0.05	0.05	0.05	0.05	-3.05
03160109	Mulberry Fork	56.23	54.59	41.71	57.22	41.30	62.84	66.80	87.55	66.61	61.74	36.30	42.45	55.61
03160110	Sipsey Fork	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03160111	Locust Fork	-27.56	-27.55	-28.69	-18.86	-14.59	-17.38	-13.40	-17.86	-23.98	-14.19	-13.94	-24.91	-20.24
03160112	Upper Black Warrior	-98.53	-77.46	-68.74	-74.51	-71.53	-63.09	-66.96	-67.44	-59.30	-68.03	-71.92	-70.46	-71.50
03160113	Lower Black Warrior	-1.14	-1.31	-2.35	0.39	-1.04	-1.04	-2.27	-1.18	-0.69	-1.21	-1.55	-1.52	-0.96
03160201	Middle Tombigbee-Chickasaw	9.71	6.89	14.11	15.12	12.86	16.76	9.97	9.45	12.76	14.44	14.96	17.50	12.88
03160202	Sucarnoochee	1.23	1.16	1.15	1.14	1.13	1.19	1.11	1.28	1.19	0.88	0.49	0.89	1.07
03160203	Lower Tombigbee	-9.83	-11.88	-5.75	-6.54	-8.00	-5.06	-12.87	-14.88	-21.51	-31.20	-37.78	-27.14	-16.02
03160204	Mobile-Tensaw	-23.17	-14.47	-14.15	-13.61	-15.45	-12.52	-7.61	-1.82	-7.54	-14.88	-18.79	-6.71	-13.74
03160205	Mobile Bay	-4.49	-4.24	-3.58	-2.40	-3.52	-3.14	-2.48	-2.88	-2.71	-2.81	-2.85	-3.46	-3.21
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170009	Mississippi Coastal	-0.33	-1.12	-0.27	-0.37	-0.28	-0.36	-0.35	-0.32	-0.32	-0.31	-0.26	-0.41	-0.39
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	-29.39	-57.80	-28.44	-48.43	-68.66	-34.55	-31.24	-31.04	-32.20	-31.16	-21.02	-19.41	-36.91
06030002	Wheeler Lake	-8.46	-0.46	-13.65	8.67	-3.24	-3.76	1.96	1.45	-5.69	1.51	-3.19	-2.39	-3.53
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
06030005	Pickwick Lake	-11.77	-6.68	-3.54	0.48	-2.64	-1.90	0.51	-1.96	4.41	5.24	2.87	0.87	-0.79
06030006	Bear	-3.54	-2.71	-2.70	-3.21	-3.13	-2.84	-3.79	-3.30	-2.23	-2.58	-4.17	-3.18	-3.11

Figure 58. Map of net industrial, thermoelectric, and mining demand, 2040, in MGD.

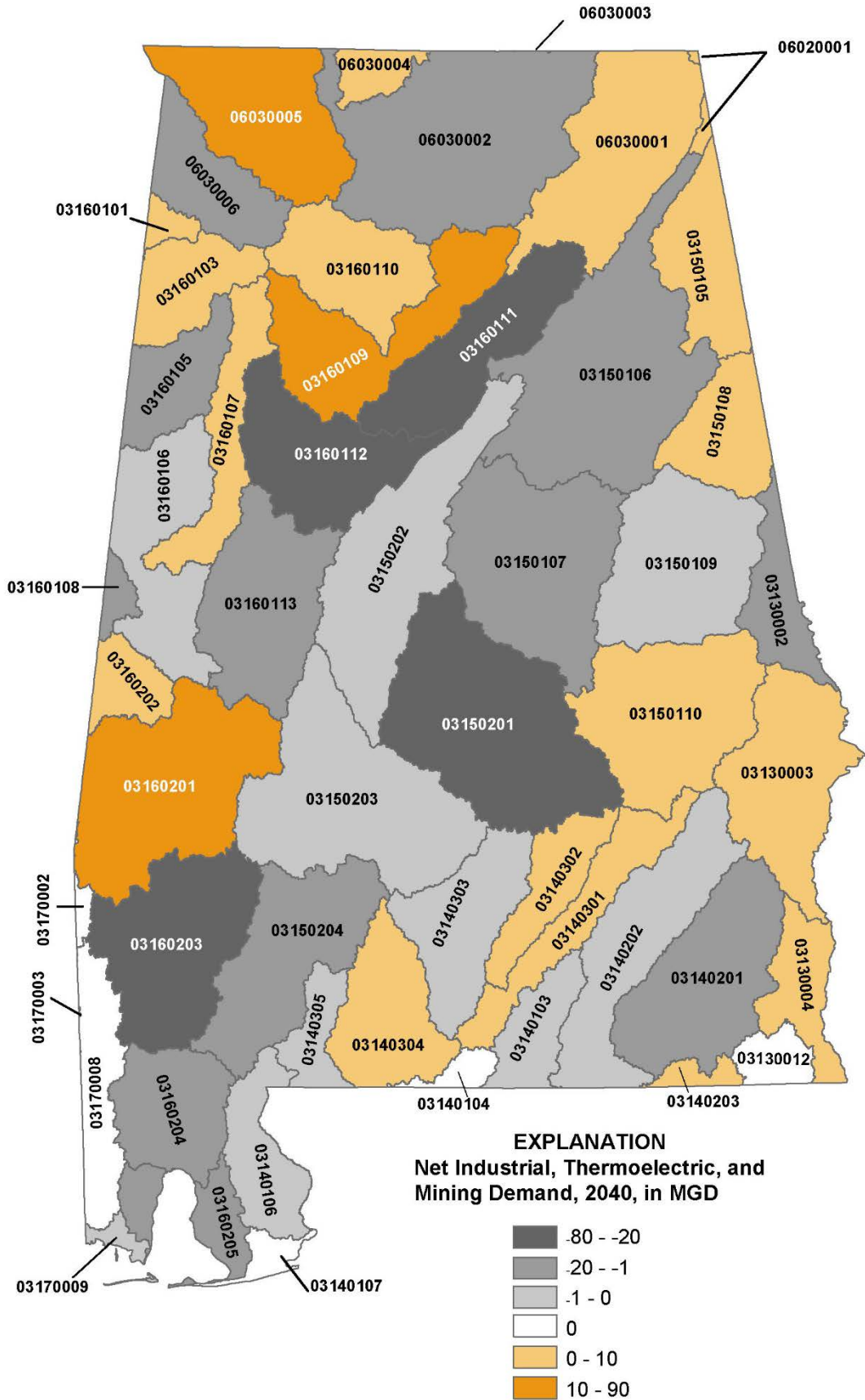


Table 46. Net industrial, thermoelectric, and mining water demand, 2040, in MGD.

03130002	Middle Chattahoochee-Lake Harding	-1.89	-1.95	-2.11	-1.75	-2.56	-1.87	-2.41	-2.74	-2.24	-2.29	-2.10	-1.66	-2.13
03130003	Middle Chattahoochee-W.F. George Res.	14.22	13.83	14.08	3.54	2.40	4.52	6.31	5.75	5.86	7.54	1.83	5.65	7.13
03130004	Lower Chattahoochee	-5.76	-8.73	-7.29	-4.48	-4.87	19.86	24.03	27.13	24.13	12.74	4.02	8.46	7.44
03130012	Chipola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140103	Yellow	-0.05	-0.04	-0.05	-0.05	-0.05	-0.04	-0.06	-0.06	-0.08	-0.06	-0.08	-0.08	-0.06
03140104	Blackwater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140106	Perdido	-0.35	-0.33	-0.35	-0.41	-0.39	-0.46	-0.42	-0.46	-0.42	-0.32	-0.42	-0.28	-0.38
03140107	Perdido Bay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03140201	Upper Choctawhatchee	-3.12	-3.33	-3.02	-3.36	-4.48	-4.44	-4.56	-4.35	-4.29	-4.21	-4.59	-4.11	-3.99
03140202	Pea	-0.83	-0.88	-0.79	-0.80	-0.79	-0.80	-0.64	-0.83	-0.61	-0.94	-0.75	-0.89	-0.80
03140203	Lower Choctawhatchee	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03140301	Upper Conecuh	2.16	2.06	1.39	1.77	2.56	3.56	3.51	3.51	1.89	2.17	1.86	2.57	2.42
03140302	Patsaliga	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
03140303	Sepulga	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
03140304	Lower Conecuh	9.04	13.78	21.90	-4.84	-6.30	-2.05	0.87	-5.50	4.53	5.47	-3.62	-7.24	2.17
03140305	Escambia	-0.20	-0.24	-0.23	-0.24	-0.21	-0.20	-0.20	-0.22	-0.28	-0.26	-0.21	-0.27	-0.23
03150105	Upper Coosa	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
03150106	Middle Coosa	-4.92	-0.13	-8.84	0.97	4.13	1.03	-22.48	-16.40	-15.24	-0.89	-6.71	-12.34	-6.82
03150107	Lower Coosa	-24.92	-26.45	-24.49	17.81	-12.65	-8.36	-11.51	-16.28	-12.53	-11.91	-11.65	-8.98	-12.66
03150108	Upper Tallapoosa	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03150109	Middle Tallapoosa	-0.41	-0.32	-0.16	-0.32	-0.20	-0.36	-0.27	-0.20	-0.13	-0.15	0.00	-0.11	-0.22
03150110	Lower Tallapoosa	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
03150201	Upper Alabama	-25.70	-28.02	-32.77	-68.69	-23.15	-17.65	-34.22	-19.51	-19.69	-16.05	-15.65	-12.35	-26.12
03150202	Cahaba	0.02	-0.66	-1.57	0.23	-2.07	0.23	-0.81	-2.07	0.22	0.08	-0.86	-1.68	-0.74
03150203	Middle Alabama	-2.68	-4.44	-1.43	0.65	0.07	0.75	1.14	1.99	-2.12	1.28	0.94	-1.46	-0.44
03150204	Lower Alabama	-3.15	-5.16	-15.75	2.79	-0.61	0.47	1.39	-4.11	-3.84	-6.98	-7.09	-9.78	-4.32
03160101	Upper Tombigbee	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
03160103	Buttahatchee	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
03160105	Luxapallila	0.22	0.06	-1.00	-0.26	-0.50	-1.97	-2.32	-10.63	-6.64	0.24	-0.45	0.05	-1.93
03160106	Middle Tombigbee-Lubbub	-0.24	-0.26	-0.50	-0.39	-0.19	-0.27	-0.18	-0.19	-0.18	-0.23	-0.24	-0.13	-0.25
03160107	Sipsey	0.60	0.60	0.60	0.56	0.54	0.54	0.60	0.60	0.59	0.60	0.60	0.60	0.59
03160108	Noxubee	-4.29	-13.46	-11.13	-5.42	-1.05	-1.60	0.05	0.05	0.05	0.05	0.05	0.05	-3.05
03160109	Mulberry Fork	87.25	84.73	64.78	88.81	64.14	97.54	103.68	135.85	103.38	95.79	56.36	65.92	87.35
03160110	Sipsey Fork	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
03160111	Locust Fork	-28.85	-29.09	-29.89	-19.62	-15.35	-18.10	-13.92	-18.65	-25.25	-14.75	-14.55	-25.90	-21.16
03160112	Upper Black Warrior	-94.38	-94.64	-64.27	-78.34	-83.73	-80.38	-86.66	-79.73	-61.78	-69.28	-86.63	-80.11	-79.99
03160113	Lower Black Warrior	-1.69	-1.95	-3.57	0.69	-1.52	-1.53	-3.44	-1.75	-0.99	-1.80	-2.32	-2.29	-1.85
03160201	Middle Tombigbee-Chickasaw	7.83	4.32	13.01	13.04	9.90	12.70	7.67	7.98	10.27	11.40	11.99	14.30	10.37
03160202	Sucarnoochee	2.52	2.40	2.37	2.36	2.34	2.47	2.33	2.64	2.47	1.90	1.25	1.89	2.24
03160203	Lower Tombigbee	-13.72	-16.61	-7.98	-9.09	-11.14	-7.00	-18.01	-20.83	-30.17	-43.81	-53.06	-38.09	-22.46
03160204	Mobile-Tensaw	-35.95	-22.42	-21.93	-21.09	-23.94	-19.40	-11.76	-2.78	-11.66	-23.06	-29.13	-10.37	-19.46
03160205	Mobile Bay	-20.27	-16.23	-13.84	-9.19	-14.01	-12.44	-9.45	-10.94	-10.96	-10.95	-10.66	-13.66	-12.72
03170002	Upper Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170003	Lower Chickasawhay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170008	Escatawpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03170009	Mississippi Coastal	-0.32	-1.08	-0.26	-0.36	-0.27	-0.35	-0.34	-0.31	-0.31	-0.29	-0.25	-0.39	-0.38
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030001	Guntersville Lake	0.59	1.22	1.01	1.44	0.83	0.96	2.65	2.48	2.55	1.77	0.72	1.13	1.45
06030002	Wheeler Lake	-9.85	-0.43	-15.93	10.31	-3.69	-4.31	2.42	1.82	-6.59	1.89	-3.64	-2.69	-2.56
06030003	Elk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06030004	Lower Elk	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
06030005	Pickwick Lake	9.04	17.00	20.39	21.28	15.45	29.58	34.62	37.35	33.90	31.57	31.06	33.29	26.21
06030006	Bear	-3.54	-2.71	-2.70	-3.21	-3.13	-2.84	-3.79	-3.30	-2.23	-2.58	-4.17	-3.18	-3.11

Figure 59. Map of net industrial, thermoelectric, and mining demand comparison, 2010 to 2040, in MGD.

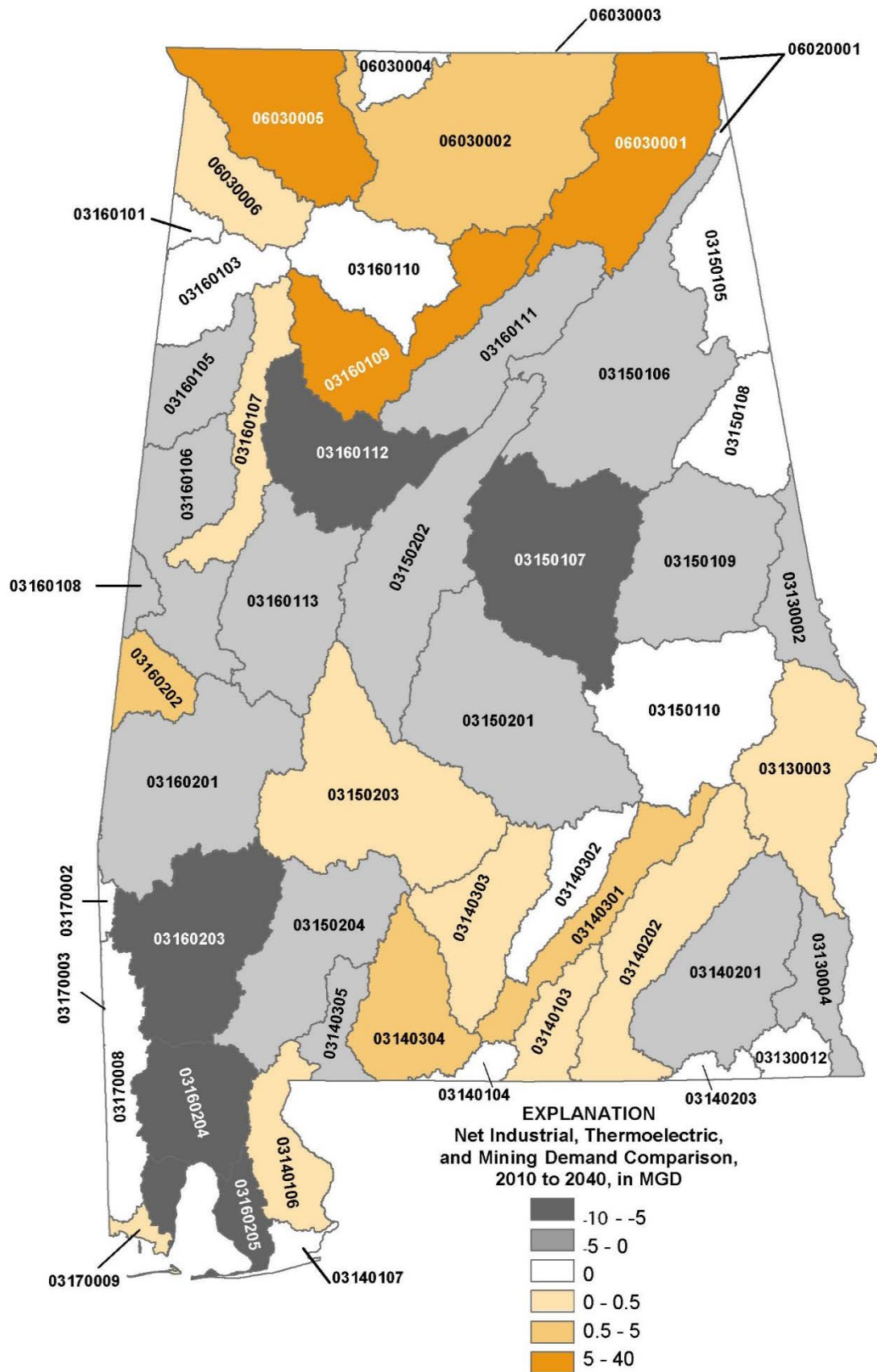


Table 47. Net industrial, thermoelectric, and mining water demand comparison, 2010 to 2040, in MGD.

Subbasin	Subbasin Name	2010 Average	2040 Average	Change in Demand	Percent Change
03130002	Middle Chattahoochee-Lake Harding	-2.13	-2.13	0.00	0%
03130003	Middle Chattahoochee-W.F. George	6.66	7.13	0.47	7%
03130004	Lower Chattahoochee	7.76	7.44	-0.32	-4%
03130012	Chipola	0.00	0.00	0.00	0%
03140103	Yellow	-0.18	-0.06	0.13	-69%
03140104	Blackwater	0.00	0.00	0.00	0%
03140106	Perdido	-0.38	-0.38	0.00	0%
03140107	Perdido Bay	0.00	0.00	0.00	0%
03140201	Upper Choctawhatchee	-3.64	-3.99	-0.35	10%
03140202	Pea	-0.93	-0.80	0.14	-15%
03140203	Lower Choctawhatchee	0.01	0.01	0.00	0%
03140301	Upper Conecuh	1.58	2.42	0.84	54%
03140302	Patsaliga	0.05	0.05	0.00	0%
03140303	Sepulga	-0.04	-0.03	0.01	-33%
03140304	Lower Conecuh	1.10	2.17	1.07	98%
03140305	Escambia	-0.10	-0.23	-0.13	124%
03150105	Upper Coosa	0.01	0.01	0.00	0%
03150106	Middle Coosa	-6.37	-6.82	-0.45	7%
03150107	Lower Coosa	-7.59	-12.66	-5.07	67%
03150108	Upper Tallapoosa	0.02	0.02	0.00	0%
03150109	Middle Tallapoosa	-0.22	-0.22	0.00	0%
03150110	Lower Tallapoosa	0.38	0.38	0.00	0%
03150201	Upper Alabama	-23.47	-26.12	-2.65	11%
03150202	Cahaba	-0.59	-0.74	-0.15	25%
03150203	Middle Alabama	-0.49	-0.44	0.05	-11%
03150204	Lower Alabama	-3.41	-4.32	-0.91	27%
03160101	Upper Tombigbee	0.02	0.02	0.00	0%
03160103	Buttahatchee	0.04	0.04	0.00	0%
03160105	Luxapallila	-1.56	-1.93	-0.37	24%
03160106	Middle Tombigbee-Lubbub	-0.25	-0.25	0.00	1%
03160107	Sipsey	0.59	0.59	0.00	0%
03160108	Noxubee	-3.05	-3.05	0.00	0%
03160109	Mulberry Fork	55.61	87.35	31.74	57%
03160110	Sipsey Fork	0.03	0.03	0.00	0%
03160111	Locust Fork	-20.24	-21.16	-0.92	5%
03160112	Upper Black Warrior	-71.50	-79.99	-8.50	12%
03160113	Lower Black Warrior	-0.96	-1.85	-0.88	91%
03160201	Middle Tombigbee-Chickasaw	12.88	10.37	-2.51	-19%
03160202	Sucarnoochee	1.07	2.24	1.17	110%
03160203	Lower Tombigbee	-16.02	-22.46	-6.44	40%
03160204	Mobile-Tensaw	-13.74	-19.46	-5.71	42%
03160205	Mobile Bay	-3.21	-12.72	-9.50	296%
03170002	Upper Chickasawhay	0.00	0.00	0.00	0%
03170003	Lower Chickasawhay	0.00	0.00	0.00	0%
03170008	Escatawpa	0.00	0.00	0.00	0%
03170009	Mississippi Coastal	-0.39	-0.38	0.01	-4%
06020001	Middle Tennessee-Chickamauga	0.00	0.00	0.00	0%
06030001	Guntersville Lake	-36.91	1.45	38.35	-104%
06030002	Wheeler Lake	-3.53	-2.56	0.97	-27%
06030003	Elk	0.00	0.00	0.00	0%
06030004	Lower Elk	0.33	0.33	0.00	0%
06030005	Pickwick Lake	-0.79	26.21	27.00	-3405%
06030006	Bear	-3.11	-3.11	0.00	0%

Surface Water Flow Assessment

This section describes the compilation and analysis of monthly streamflow data needed to assess the surface-water resources of the state. The specific objectives were to compile and estimate the historic monthly streamflow data from January 1975 through December 2014 (the data assessment period) for 186 sites within Alabama or adjacent states (figure 60). Forty-three sites had complete periods of record from January 1975 through December 2014 but the remaining 143 locations required estimates of monthly streamflow data (Appendix G, table G-1). Monthly streamflows were not estimated for 15 locations because the long-term index site used in those analyses did not have enough record during the 1975 to 2014 period (Appendix G, table G-2). In those instances, annual streamflow characteristics were estimated at the short-term record site using the methodologies described in the flow assessment methodology section.

The user of the estimated streamflow needs to be aware of the anticipated accuracy of the data. Any kind of error analysis would be very difficult to perform and may lead to more confusion. Data for many sites are the result of combined methods. The data sets should have very little bias based on the methodologies. The longer the period of data that is used, the less risk should be associated with the analysis. In addition, the observed and estimated streamflows in this report reflect the amount of water flowing in a stream or river at a location and include the effects of consumptive uses or other man-made changes that occurred upstream from the point of interest (U.S. Army Corps of Engineers, 1997).

There are officially 53 subbasins in Alabama, but only 45 subbasins had sufficient data to be evaluated. The eight subbasins that were not analyzed are shown in figure 61 and table 48.

Streamflow Estimation Methods

Three methods were used in this study to extend data for gaging stations with incomplete data for the data assessment period of 1975 to 2014 and to estimate streamflow at ungaged sites near streamflow gaging stations with long periods of record. The three methods that were used were the drainage-area ratio, the Maintenance of Variance Extension Type 1 (MOVE.1), and multiple regression methods.

Figure 60. Map of streamflow assessment sites.

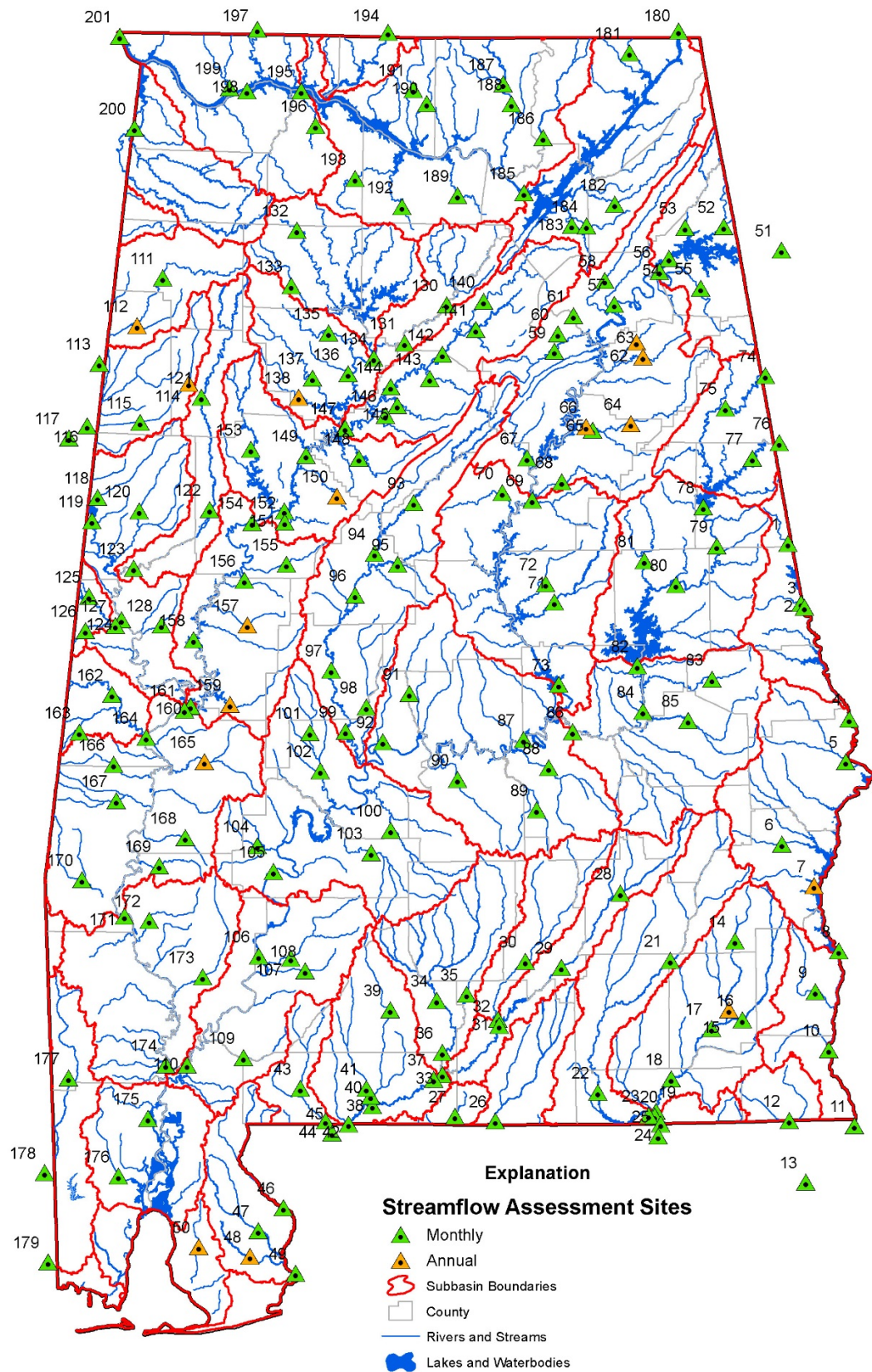


Figure 61. Map of subbasins not assessed due to insufficient data.

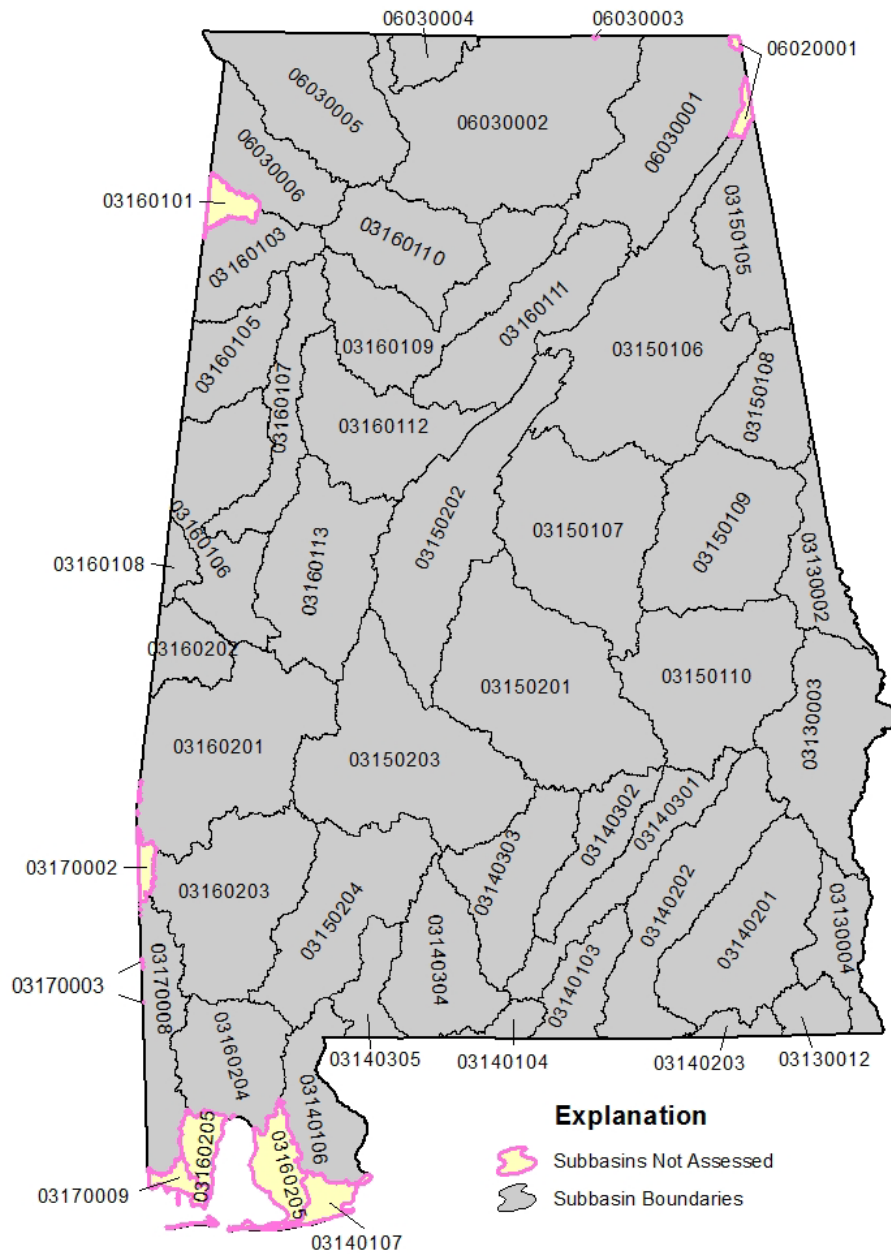


Table 48. Subbasins not assessed due to insufficient data.

Subbasin Number	Subbasin Name
03140107	Perdido Bay
03160101	Upper Tombigbee
03160205	Mobile Bay
03170002	Upper Chickasawhay
03170003	Lower Chickasawhay
03170009	Mississippi Coastal
06020001	Middle Tennessee-Chickamauga
06030003	Upper Elk

Drainage-Area Ratio Method

The drainage-area ratio method can be used to extend the streamflow data for the site of interest (estimated discharge site) or to estimate the streamflow when streamflow data are available for a nearby gaging station (index station). The drainage-area ratio method (Hirsch, 1979) assumes that the ratio of the streamflows at two sites is equal to the ratio of their respective drainage areas. The equation for the drainage-area ratio method is:

$$\tilde{y}_i = \left(\frac{a_y}{a_x} \right) x_i \quad (1)$$

where

\tilde{y}_i is the estimated streamflow during month i at the estimated discharge site, in cubic feet per second;

a_y is the drainage area at the estimated discharge site, in square miles;

a_x is the drainage area at the index station, in square miles; and

x_i is the gaged streamflow during month i at the index station, in cubic feet per second.

When the drainage-area ratio method was used, the gaging station nearest the estimated site was selected as the index station, if data was available for the period when streamflow was to be estimated. If no streamflow records were available at the estimated discharge site, then the streamflow was assumed to be proportional to the drainage area.

MOVE.1 Method

The MOVE.1 method was used to extend streamflow data when streamflow data were available for the estimated discharge site for a period of N years and data was available for the index station for the same N years of record. Hirsch (1982) showed that the MOVE.1 method, which is similar to regression methods, preserves the statistical characteristics of the actual data better than traditional regression methods. Use of MOVE.1 results in preservation of sample estimates of the mean of the variance from the historical data (N years). Additionally, use of MOVE.1 allows selection of different index stations to fill in missing data for the estimated discharge site.

The equation for the MOVE.1 method is:

$$\tilde{y}_i = m(y) + \left[\frac{s(y)}{s(x)} \right] [x_i - m(x)] \quad (2)$$

where

\tilde{y}_i is the estimated streamflow during month i at the estimated discharge site, in cubic feet per second;

y_i is the gaged streamflow during month i at the estimated discharge site, in cubic feet per second;

$m(y)$ is the mean of N years of gaged streamflow at the estimated discharge site, in cubic feet per second;

$s(y)$ is the standard deviation of N years of gaged streamflow at the estimated discharge site, in cubic feet per second;

$s(x)$ is the standard deviation of N years of gaged streamflow at the index station, in cubic feet per second;

x_i is the gaged streamflow during month i at the index station, in cubic feet per second; and

$m(x)$ is the mean of N years of gaged streamflow at the index station, in cubic feet per second.

In some instances, logarithms of streamflow values were used in the regression or MOVE.1 analysis if the results of the equations with log-transformed data were better than equations that did not use log-transformed data. In those cases, the streamflow values were transformed to logarithms prior to use in equation 2. When the MOVE.1 method was used, the index station was selected based on the similarity of basin characteristics and proximity to the estimated discharge site.

Multiple Regression Methods

Multiple regression methods were utilized when the association between the flows at the index site and the flows at the estimated discharge site exhibited more of a curvilinear relation as opposed to a linear relation that could be explained using simple linear regression or the MOVE.1 method. The multiple regression methods used in this report consisted of polynomial equations in the form of:

$$\tilde{y}_i = b_0 + b_1x_i + b_2x_i^2 + \dots + b_kx_i^k \quad (3)$$

where \tilde{y}_i and x were defined earlier, b_0 , b_1 , b_2 , and b_k are regression coefficients, and the equation for \tilde{y}_i is written as a function of k higher order terms for x_i (McClave and others, 1997).

Statistical Evaluation Methods

Three statistical methods were used to select the best equations to estimate monthly streamflow. The statistical methods included root mean square error (*RMSE*), Pearson product-moment correlation coefficient (R^2), and the Nash-Sutcliffe model efficiency coefficient (*NSE*). Summaries of the methods used for each of the 201 streamflow sites as well as the *RMSE*, R^2 , and *NSE* values (if applicable) are listed in Appendix G, tables G-3 and G-4.

The *RMSE* was calculated as:

$$RMSE = \sqrt{\frac{\sum_{i=1}^n (\tilde{y}_i - y_i)^2}{N - 2}} \quad (4)$$

where the variables are as previously defined. The *RMSE* represents the mean of the absolute distance between the observed and simulated values and is expressed in the units of the original data; if logarithmic equations were used, then the *RMSE* values were expressed in logarithmic units. This statistic was used to measure the difference between estimated and observed streamflows and indicates the overall predictive accuracy of the regression equation. A low *RMSE* value indicated a close fit between the observed and estimated streamflow values (McClave and others, 1997).

The R^2 statistic was calculated as:

$$R^2 = \left(\frac{\sum_{i=1}^n [\tilde{y}_i - m(\tilde{y})][y_i - m(y)]}{\sqrt{\sum_{i=1}^n [\tilde{y}_i - m(\tilde{y})]^2 \sum_{i=1}^n [y_i - m(y)]^2}} \right)^2 \quad (5)$$

where $m(\tilde{y})$ is the mean of N years of estimated streamflow at the estimated discharge site, in cubic feet per second and the variables are as previously defined. The R^2 statistic is a measure of the linear relation between two variables and represents the amount of variability that is explained by another variable (in this case, the estimated monthly streamflows). Depending on the strength of the linear relationship, the R^2 value can vary from 0 to 1, in which a value of 1 indicates a perfect fit between the observed and the estimated values. The R^2 statistic is generally regarded as a measure of the goodness of fit of the statistical model (Evans and others, 2003).

The *NSE* was calculated as:

$$NSE = 1 - \left[\frac{\sum_{i=1}^n [\tilde{y}_i - y_i]^2}{\sum_{i=1}^n [y_i - m(y)]^2} \right] \quad (6)$$

where the variables are as previously defined. Like the R^2 statistic previously described, the *NSE* is another indicator of “goodness of fit” and is one that has been recommended by the American Society of Civil Engineers (ASCE, 1993) for use in hydrological studies. An *NSE* equal to 1 would indicate a perfect fit between the observed and estimated data, and a value of zero or less would indicate that the model is not any better at predicting values than using the average of the observed data. The *NSE*, therefore, represents how efficient a model performs in predicting an outcome (Evans and others, 2003).

Results

Streamflow statistics were based on observed and estimated monthly streamflows using a 40-year period from January 1975 through December 2014. The period was selected because more streamflow data was available and provided a more balanced streamflow data set that would include a representative number of low and high streamflow years during the 40-year data assessment period. Monthly streamflows were estimated for any missing data at each individual site based on the techniques discussed in the preceding sections. Observed or estimated monthly streamflows were summarized for each of the 45 subbasins (Appendix K) and several locations in each subbasin from January 1975 to December 2014 for a total of 186 locations in Alabama and adjacent states. In addition, statistical summaries of the monthly streamflow data were calculated that include mean monthly and mean annual streamflow and the magnitude and duration of monthly and annual low flows and are listed in Appendix L.

Monthly streamflows were not estimated for 15 locations because the long-term index site used in those analyses did not have enough records during the 1975 to 2014 period. In those instances, streamflow characteristics were estimated at the short-term record site for the period of record using the methodologies described in the flow assessment methodology section. Those 15 short-term record sites were referred to as annual flow assessment sites to differentiate those sites from the monthly flow assessment sites described earlier. Statistical summaries for the 15 annual flow assessments are listed in Appendix M.

Streamflow Summary

The compilation and analysis of monthly streamflow data provided the basis for summarizing streamflow contributions in major streams and rivers in Alabama as well as summarizing the amount of water flowing across Alabama's boundaries from and to adjacent states. The streamflows that are presented in this section of the report represent streamflows that were averaged over the 1975 through 2014 period as described earlier in the report.

The waters of the Tennessee River originate in Virginia, North Carolina, and Tennessee. The river flows southwest into north Alabama and then flows northward through the state of Tennessee to the Ohio River in Kentucky. The main stem of the Tennessee River in Alabama is completely impounded to form Guntersville Lake, Wheeler Lake, Wilson Lake, and Pickwick Lake reservoirs which are managed by the TVA for flood control, power generation, navigation, and recreation (Mettee and others, 1996). Approximately 40,290 CFS flows in the Tennessee River from Tennessee into Alabama and 54,560 CFS flows out of Alabama into Mississippi and Tennessee. The largest tributaries to the Tennessee River in Alabama are the Bear Creek and Elk River subbasins with the Elk River contributing 3,930 CFS (35 percent of the Tennessee River's flow in Alabama) and Bear Creek contributing 1,170 CFS (10 percent of the Tennessee River's flow in Alabama).

The Mobile River Basin is the largest river basin in Alabama encompassing parts of Alabama, Georgia, Mississippi, and Tennessee. Nearly two-thirds of the basin's 44,000 mi² lie in Alabama (Johnson and others, 2002). The Mobile River is formed by the confluence of the Alabama and Tombigbee Rivers near Mount Vernon, Alabama. The Alabama River, which drains 22,800 mi², has headwaters in northwestern Georgia and the southeastern corner of Tennessee and

flows into the Mobile River from the east and the Tombigbee River, which drains 20,200 mi², has headwaters in northeastern Mississippi and flows into the Mobile River from the west (Atkins, 1998). The Alabama and Tombigbee River Basins can be further divided into seven subbasins. The Black Warrior River is a major tributary to the Tombigbee River with the confluence near Demopolis, Alabama. The Alabama River is formed by the confluence of the Coosa and Tallapoosa Rivers near Montgomery, Alabama; and the Cahaba River, also a major tributary, joins the Alabama River downstream from Selma, Alabama. Streamflow in the Alabama and Tombigbee River Basins is regulated by upstream reservoirs, flood-control and navigational locks and dams, and hydroelectric plants (Atkins and others, 2004). The mean annual streamflow of the Mobile River is about 52,770 CFS with approximately 55 percent of the Mobile River's streamflow contributed from the Alabama River (27,370 CFS) and 45 percent from the Tombigbee River (25,400 CFS). About 15,680 CFS of the Alabama River's streamflow (57 percent) comes from the Coosa River, 6,340 CFS (23 percent) from the Tallapoosa River, and about 2,780 CFS (10 percent) from the Cahaba River. The Coosa and Tallapoosa River Basins receive 7,090 CFS and 690 CFS, respectively, from Georgia. About 9,030 CFS flows in the Tombigbee River from Mississippi into Alabama and the Black Warrior River is the major tributary to the Tombigbee River providing about 46 percent of the Tombigbee's mean annual streamflow (11,650 CFS).

The Chattahoochee River originates in northeast Georgia and flows in a southwesterly direction. The river forms the border between Alabama and Georgia just downstream from West Point Dam (average streamflow 5,190 CFS) and continues as the Alabama-Georgia state border until the river crosses the Alabama-Florida state line with an average streamflow of 10,400 CFS. The portion of the Chattahoochee River Basin in Alabama covers an area of 2,574 mi² (O'Neil, 2013) and includes major tributaries of the Chattahoochee River such as Uchee, Cowikee, and Abbie Creeks. Uchee Creek contributes an average of 410 CFS to the Chattahoochee River, whereas Cowikee and Abbie Creeks contribute 480 and 640 CFS, respectively.

The Chipola River, a tributary to the Apalachicola River in Florida, originates in Houston County, just south of Dothan, Alabama and includes 258 mi² of Alabama in Houston County (O'Neil, 2013). Approximately 350 CFS flows in Big and Cowarts Creeks in southern Houston County across the state line into Florida; the two creeks join to form the Chipola River north of Marianna, Florida.

Approximately 8,800 mi² in south-central Alabama between the Chattahoochee and Mobile River Basins in Alabama include the Choctawhatchee, Yellow, Blackwater, Conecuh, and Perdido Rivers which ultimately drain directly to the Gulf of Mexico. The Choctawhatchee River, with a drainage area of 3,159 mi² in Alabama, is formed by the confluence of the East and West Forks of the Choctawhatchee River in Dale County southeast of Ozark in southeast Alabama. The flow is generally southward through Alabama into northwest Florida to empty into Choctawhatchee Bay and then into the Gulf of Mexico. About 4,690 CFS flows in the Choctawhatchee River from Alabama into Florida. The Pea River, the largest tributary to the Choctawhatchee, joins the Choctawhatchee River near Geneva in Geneva County. This is a short distance north of the Alabama-Florida state line and contributes 57 percent (2,660 CFS) of the Choctawhatchee River's streamflow at the state line.

The Yellow River is formed in Covington County northeast of Andalusia in south central Alabama and flows generally southward into Blackwater Bay in Florida. The Yellow River encompasses 507 mi² in Alabama (O'Neil, 2013) and has a mean annual discharge of 780 CFS at the Alabama – Florida state line.

The Blackwater River is formed in the Conecuh National Forest in eastern Escambia County, Alabama and also flows south towards Blackwater Bay in Florida. The Blackwater River, of which 148 mi² is included in Alabama (Mettee and others, 1996), has a mean annual discharge of 140 CFS at the Alabama – Florida state line.

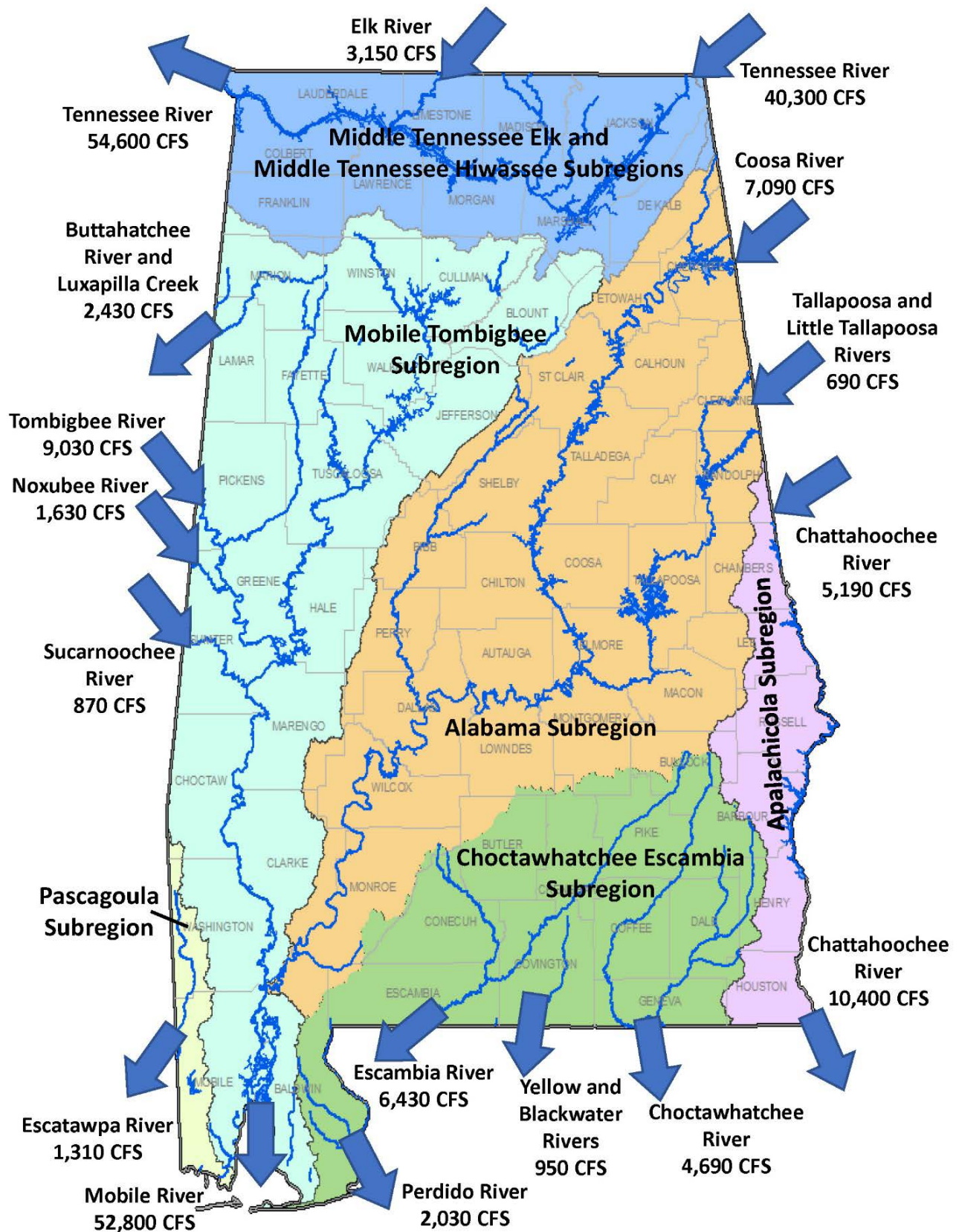
The Conecuh River Basin encompasses 3,340 mi² and nine counties in Alabama with its headwaters originating in Bullock County near Union Springs. The Conecuh River is also called the Escambia River once it flows into Florida where it drains into Escambia Bay near Pensacola. Major tributaries of the Conecuh River include Murder Creek, Patsaliga Creek, and the Sepulga River. The Conecuh River includes two impoundments on its main stem, Point A and Gantt Lakes near Andalusia. Approximately 6,430 CFS flows in the Conecuh River from Alabama into Florida with Murder Creek contributing 980 CFS (15 percent), the Sepulga River contributing 1,390 CFS (22 percent) and Patsaliga Creek contributing 770 CFS (12 percent) to the Conecuh River's streamflow in Alabama. Big Escambia Creek, which begins in south Monroe County, flows south across the state line into the Escambia River in Florida and contributes an annual average streamflow of 640 CFS to the Escambia River.

The Perdido River begins in west Escambia County in Alabama and flows through Baldwin County in Alabama and Escambia County in Florida forming the boundary between Alabama and Florida before ultimately flowing into Perdido Bay and the Gulf of Mexico. Nearly two-thirds of the Perdido River subbasin includes land in Alabama and an average of 1,990 CFS flows from the Perdido River with the Styx River, the Perdido River's largest tributary, contributing 440 CFS to the Perdido River streamflow.

The Escatawpa River's headwaters begin in southwest Alabama in Washington County less than one mile from the Alabama-Mississippi state line. The river flows in a southerly direction from Alabama into Mississippi and crosses the state line near Wilmer, Alabama, eventually flowing into the Pascagoula River and Pascagoula Bay. Approximately 1,110 CFS flows in the Escatawpa River from Alabama into Mississippi. The Escatawpa River's largest tributary is Big Creek with an average streamflow of 201 CFS at the state line that is affected by storage in J.B. Converse Lake. The lake is in the upper half of the Big Creek subbasin and serves as a water-supply reservoir for the Mobile area. The estimated drainage area of the Escatawpa River Basin and its tributaries at the state line is 701 mi² (Soil Conservation Service, 1985).

An estimated 62,750 CFS flows into Alabama in the Tennessee, Coosa, Tallapoosa, and Tombigbee River Basins and an average of 127,300 CFS flows out of the state in the Chattahoochee, Choctawhatchee, Yellow, Blackwater, Escambia, Perdido, Mobile, Escatawpa, and Tennessee River Basins. A depiction of the streamflows into and out of Alabama is displayed in figure 62.

Figure 62. Map of average flows into and out of Alabama for the period 1975-2014.



Comparison of Demands and Flows by Subbasin

A useful method for evaluating consumptive use in a subbasin is to express the consumptive use (or net demand) in relation to the streamflow in the subbasin. This can be accomplished by calculating the relative net demand, or RND, which is the ratio of the net demand to an estimate of the average streamflow at the mouth of the subbasin (Weiskel and others, 2007). The RND for a subbasin is expressed as follows:

$$RND = \frac{D_{out} - D_{in}}{Q_{out}} \quad (7)$$

where

D_{out} is the total withdrawals in the subbasin, in cubic feet per second; and

D_{in} is total return flows plus imports of water and wastewater to the basin, in cubic feet per second; and

Q_{out} is the average outflow of the subbasin, in cubic feet per second (Reeves, 2010).

Weiskel and others (2007) stated that positive ratios of RND indicate withdrawals are greater than return flows and negative ratios of RND indicate return flows (plus imports) are greater than withdrawals in a subbasin. Therefore, RND can be used to characterize return-flow-dominated and withdrawal-dominated systems. For this report, cumulative consumptive demands that included demands from upstream subbasins were used to calculate RND ratios.

Monthly cumulative consumptive 2010 and 2040 demands were compared to monthly flow statistics for each subbasin. Results of the comparisons revealed that all of the monthly cumulative consumptive 2010 and 2040 net demands were less than the minimum monthly streamflow for each subbasin with the exception of the December minimum monthly flow in the Sipsey Fork subbasin. As a result, the monthly 2010 and 2040 demand values were compared to the monthly minimum and average monthly flows using equation 7 and represented as RND_{min} and RND_{avg} , respectively. The cumulative consumptive demands and streamflow statistics for each subbasin are summarized in Appendix H. The monthly and seasonal 2010 RND_{min} , 2040 RND_{min} , 2010 RND_{avg} , and 2040 RND_{avg} ratios are listed in Appendix I, tables I-1 through I-8 and displayed as choropleth maps in Appendix J, figures J-1 through J-64.

Monthly ratios of 2010 RND_{min} ranged from -0.50 in the Locust Fork subbasin to 1.47 in the Sipsey Fork subbasin (Appendix I, table I-1). Monthly ratios of 2010 RND_{min} ranged from -0.50 in June to -0.16 in April for the Locust Fork subbasin (03160111) indicating that it is a return-flow dominated subbasin. Overall, the 2010 RND_{min} ratios were highest in the Escatawpa subbasin (03170008), ranging from 0.17 in March to 0.8 in October, indicating that it is a withdrawal-dominated subbasin.

Based on the estimated projected demands, monthly ratios of 2040 RND_{min} ranged from -0.52 in the Locust Fork (03160111) subbasin to 1.47 in the Sipsey Fork subbasin (03160110)

(Appendix I, table I-2). Monthly ratios of 2040 RND_{min} ranged from -0.52 in June to -0.16 in April for the Locust Fork subbasin (03160111). Overall, the 2040 RND_{min} ratios were highest in the Escatawpa River subbasin (03170008), ranging from 0.20 in March to 0.95 in October.

The monthly ratios of 2010 RND_{avg} and 2040 RND_{avg} were much less than the monthly 2010 RND_{min} and 2040 RND_{min} ratios because the average flows were significantly higher than the minimum flows used in the earlier comparisons. Similarly, monthly ratios of 2010 RND_{avg} ranged from -0.06 in the Locust Fork subbasin (03160110) to 0.16 in the Escatawpa subbasin (03170008) (Appendix I, table I-3). Monthly ratios of 2010 RND_{avg} ranged from -0.06 in June to -0.02 in April and October for the Locust Fork subbasin (03160111) and monthly ratios of 2010 RND_{avg} ranged from 0.05 in February and March to 0.16 in October for the Escatawpa subbasin (03170008). Based on the estimated projected demands, monthly ratios of 2040 RND_{avg} ranged from -0.06 in the Locust Fork subbasin to 0.19 in the Escatawpa subbasin (Appendix I, table I-4). Monthly ratios of 2040 RND_{avg} ranged from -0.06 in June to -0.02 in October for the Locust Fork subbasin (03160111). Conversely, monthly ratios of 2040 RND_{avg} ranged from 0.06 in February and March to 0.19 in October for the Escatawpa subbasin (03170008).

Seasonal and annual summaries of the monthly 2010 RND_{min} , 2040 RND_{min} , 2010 RND_{avg} , and 2040 RND_{avg} ratios were also calculated and presented in this report. The monthly RND ratios were seasonally averaged for three-month periods as January – March, April – June, July – September, and October – December. Seasonal ratios of 2010 RND_{min} ranged from -0.34 in the Locust Fork subbasin (03160111) to 0.68 in the Sipsey Fork subbasin (03160110) (Appendix I, table I-5). Seasonal ratios of 2010 RND_{min} ranged from -0.34 during April – June to -0.23 during July – September for the Locust Fork subbasin (03160111) whereas seasonal ratios of 2010 RND_{min} ranged from 0.22 during January – March to 0.64 during July – September for the Escatawpa subbasin (03170008) (figure 63). For 2040, seasonal ratios of 2040 RND_{min} ranged from -0.35 during April – June to -0.24 during July – September for the Locust Fork subbasin (03160111) whereas seasonal ratios of 2040 RND_{min} ranged from 0.26 during January – March to 0.76 during July – September for the Escatawpa subbasin (03170008) (Appendix I, table I-6 and figure 64). Annual ratios of 2010 RND_{min} ranged from -0.14 in the Locust Fork subbasin (03160111) to 0.27 in the Escatawpa subbasin (03170008) (Appendix I, table I-5 and figure 65) and annual ratios of 2040 RND_{min} ranged from -0.15 in the Locust Fork subbasin (03160111) to 0.32 in the Escatawpa subbasin (03170008) (Appendix I, table I-6 and figure 66).

The seasonal ratios of 2010 RND_{avg} and 2040 RND_{avg} were also much less than the seasonal 2010 RND_{min} and 2040 RND_{min} ratios. Seasonal ratios of 2010 RND_{avg} ranged from -0.05 in the Locust Fork subbasin (03160111) to 0.13 in the Escatawpa subbasin (03170008) (Appendix I, table I-7). For the Locust Fork subbasin (03160111), seasonal ratios of 2010 RND_{avg} ranged from -0.05 during January – March to -0.03 during October – December and for the Escatawpa subbasin (03170008), seasonal ratios of 2010 RND_{avg} ranged from 0.05 during January – March to 0.13 during July – September (figure 67). Based on the estimated projected demands, seasonal ratios of 2040 RND_{avg} ranged from -0.05 in the Locust Fork subbasin (03160111) to 0.16 in the Escatawpa subbasin (03170008) (Appendix I, table I-8 and figure 68).

Seasonal ratios of 2040 RND_{avg} ranged from -0.05 during January – March to -0.03 during October – December for the Locust Fork subbasin (03160111). Conversely, seasonal ratios of 2040 RND_{avg} ranged from 0.06 during January – March to 0.16 during July – September for the Escatawpa subbasin (03170008). Annual ratios of 2010 RND_{avg} ranged from -0.04 in the Locust Fork subbasin (03160111) to 0.08 in the Escatawpa subbasin (03170008) (Appendix I, table I-7 and figure 69) and annual ratios of 2040 RND_{avg} ranged from -0.04 in the Locust Fork subbasin (03160111) to 0.10 in the Escatawpa subbasin (03170008) (Appendix I, table I-8 and figure 70).

Although all of the subbasins indicated consumptive use was equal to a small percentage of the streamflow, there may be local areas in that subbasin where the percentage of consumptive use is high. The purpose of considering these percentages of consumptive use as compared to streamflow was to provide a method to compare current and future water use to streamflow on a broad regional scale. The results show that for a very large part of the state, consumptive use is equal to a very low percentage of streamflow and considerable increases in consumptive use can be sustained. However, the factors affecting or limiting water availability may not be due to limited water sources but limitations of the existing local or regional water supply systems that include reservoirs, wells, pipelines, as well as the suitability of the water for its intended use.

Figure 63. Maps of seasonal 2010 minimum RND ratios (2010 RND_{min}) by subbasin.

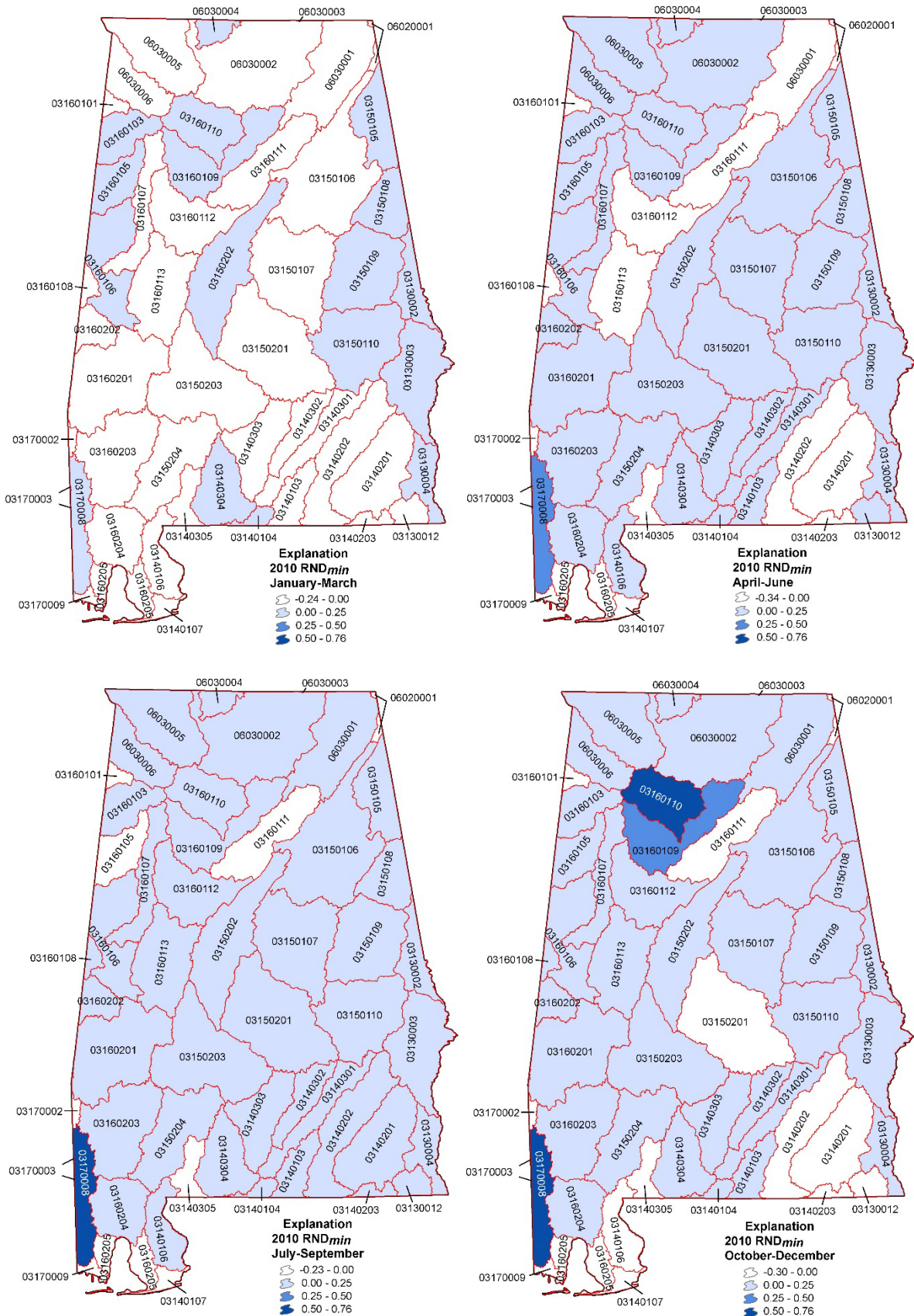


Figure 65. Map of 2010 annual minimum RND ratios (2010 RND_{min}) by subbasin.

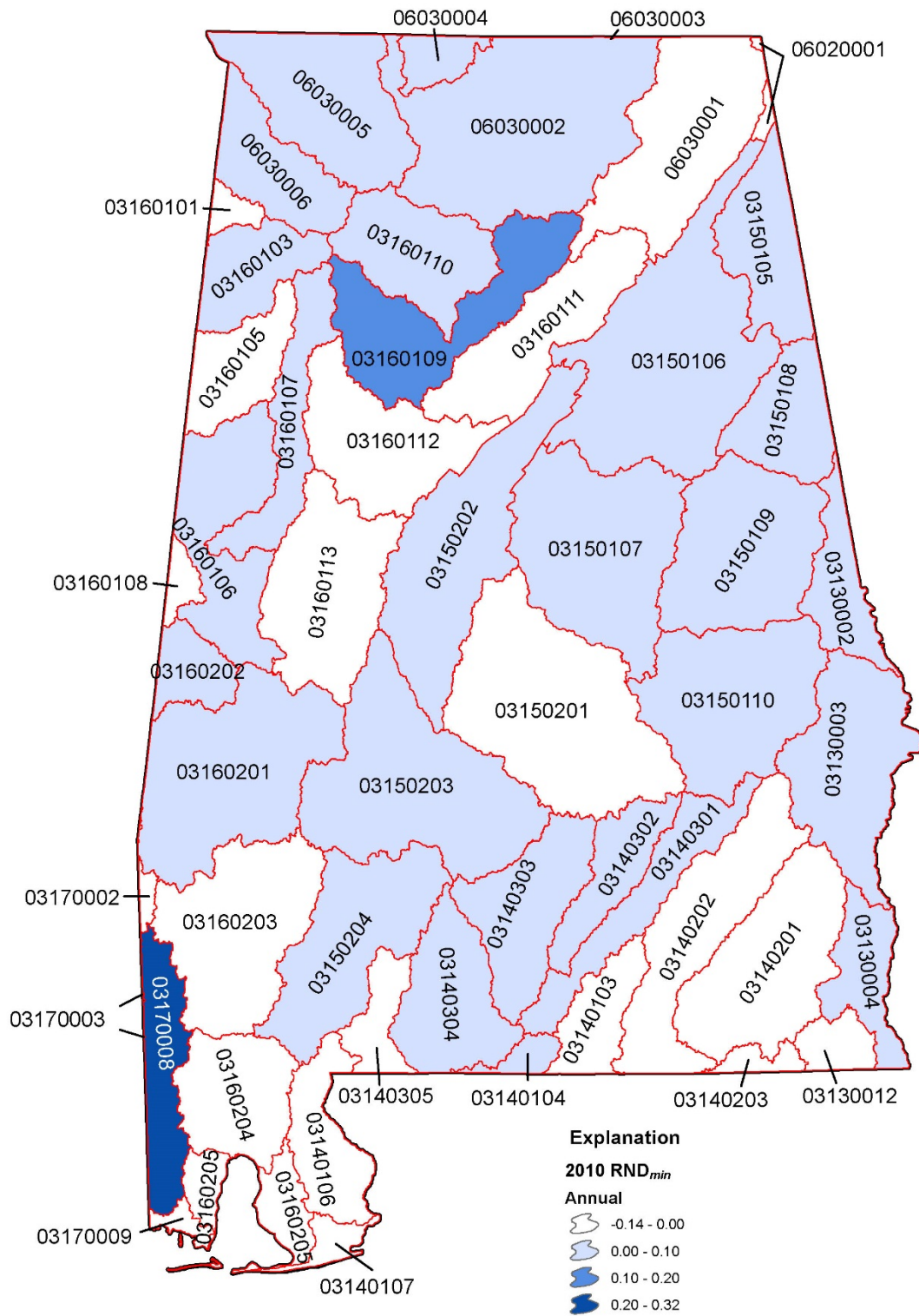


Figure 66. Map of 2040 annual minimum RND ratios (2040 RND_{min}) by subbasin.

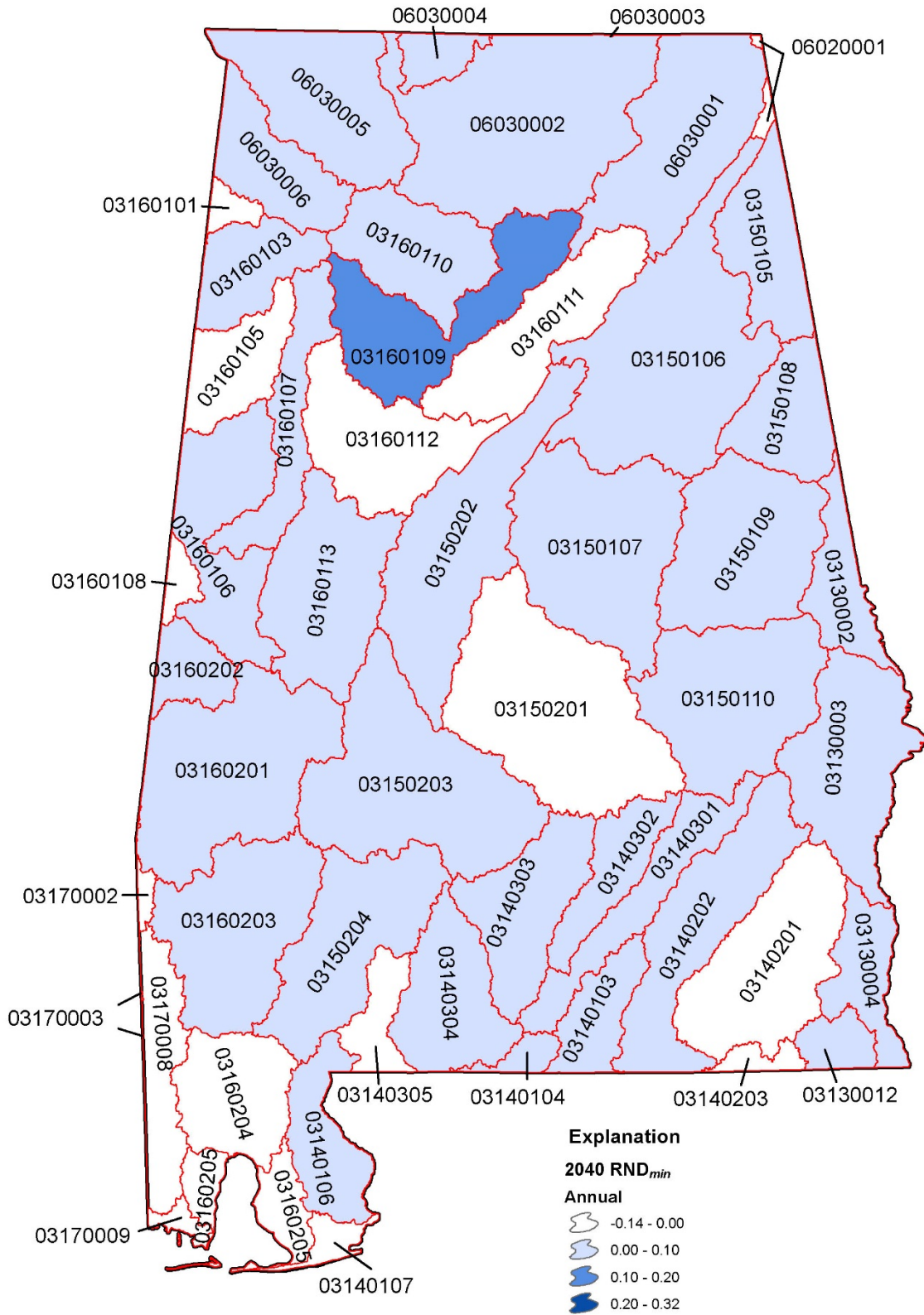


Figure 67. Maps of seasonal 2010 average RND (2010 RND_{avg}) ratios by subbasin.

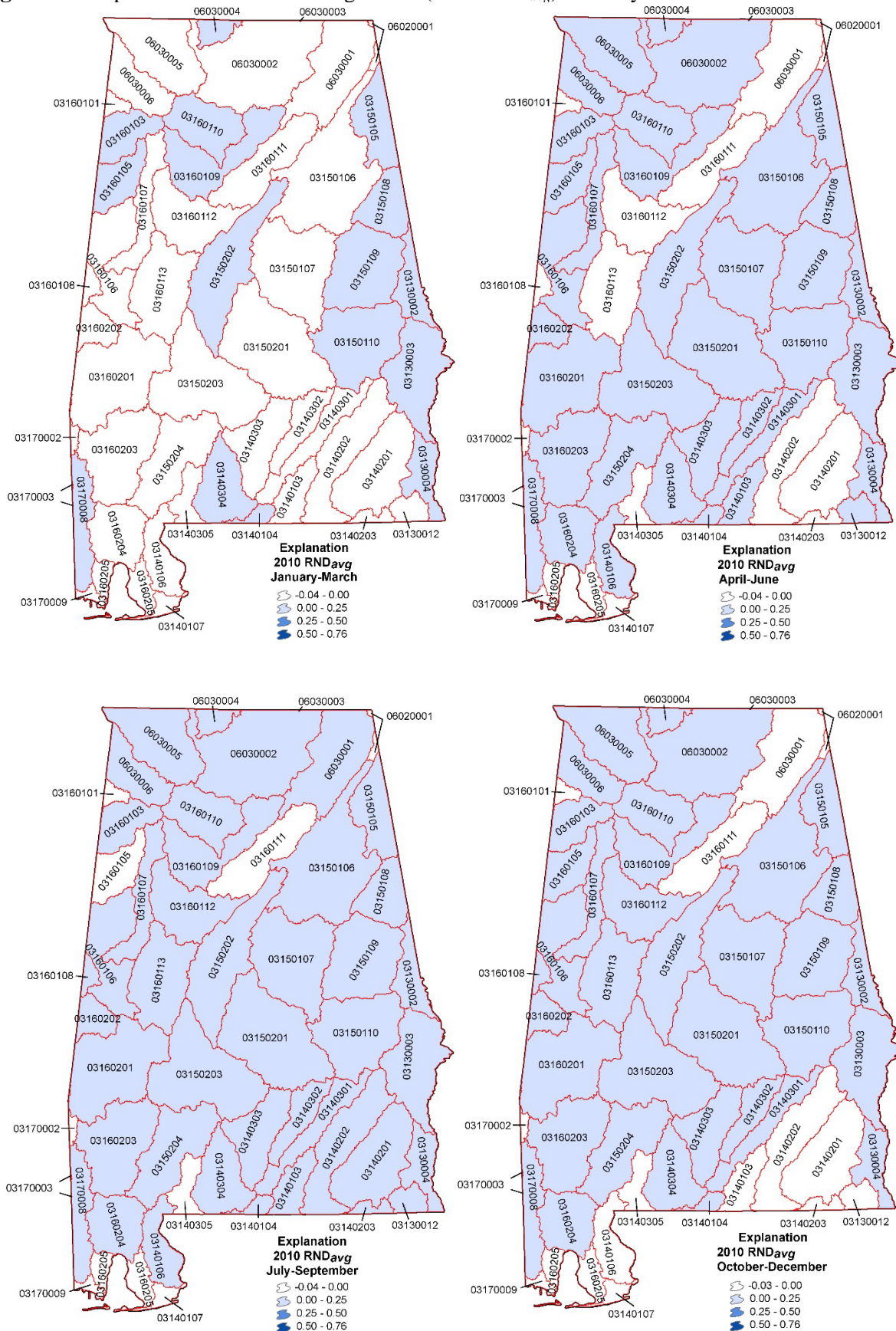


Figure 68. Maps of seasonal 2040 average RND ratios (2040 RND_{avg}) by subbasin.

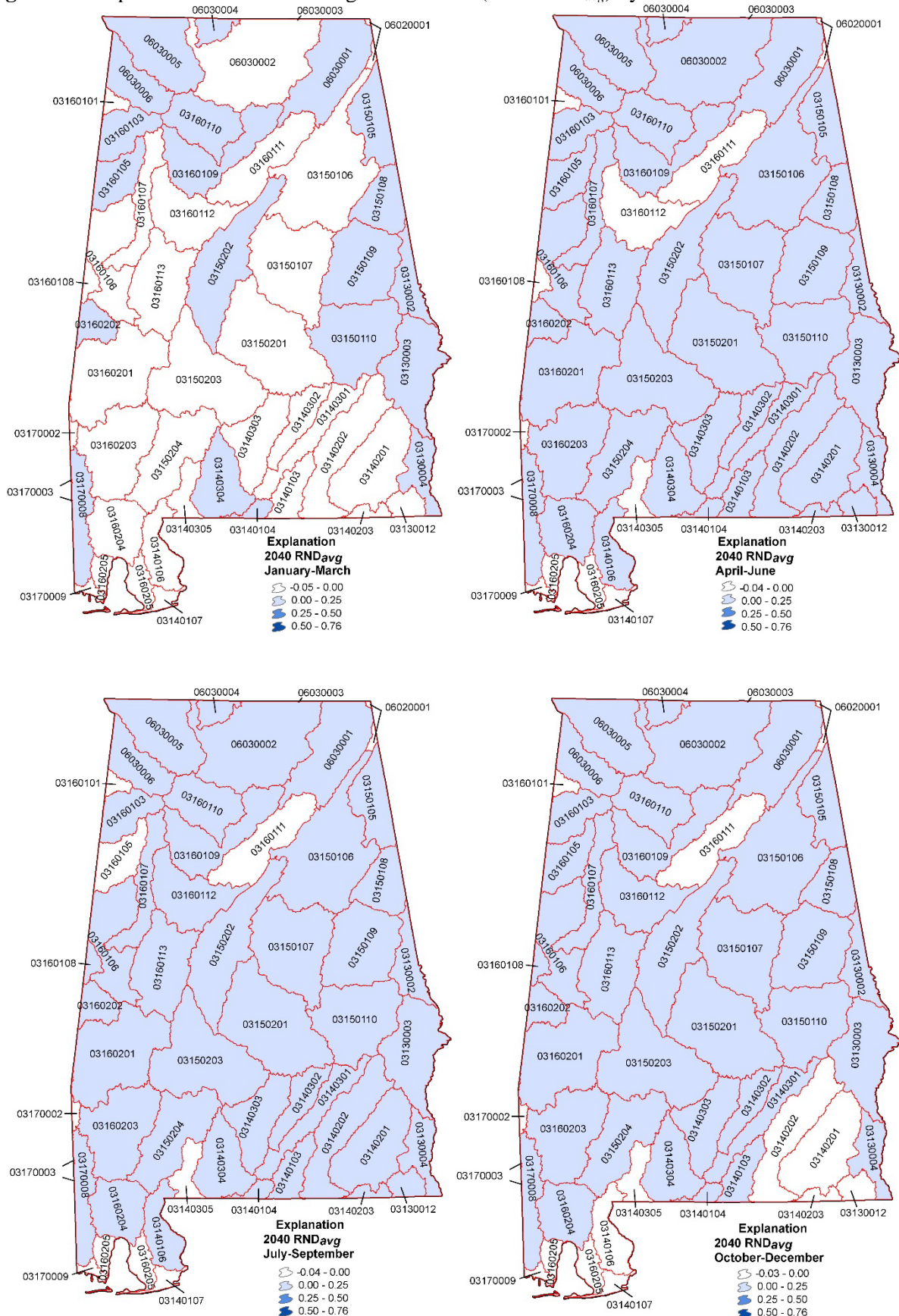


Figure 69. Map of 2010 annual average RND ratios (2010 RND_{avg}) by subbasin.

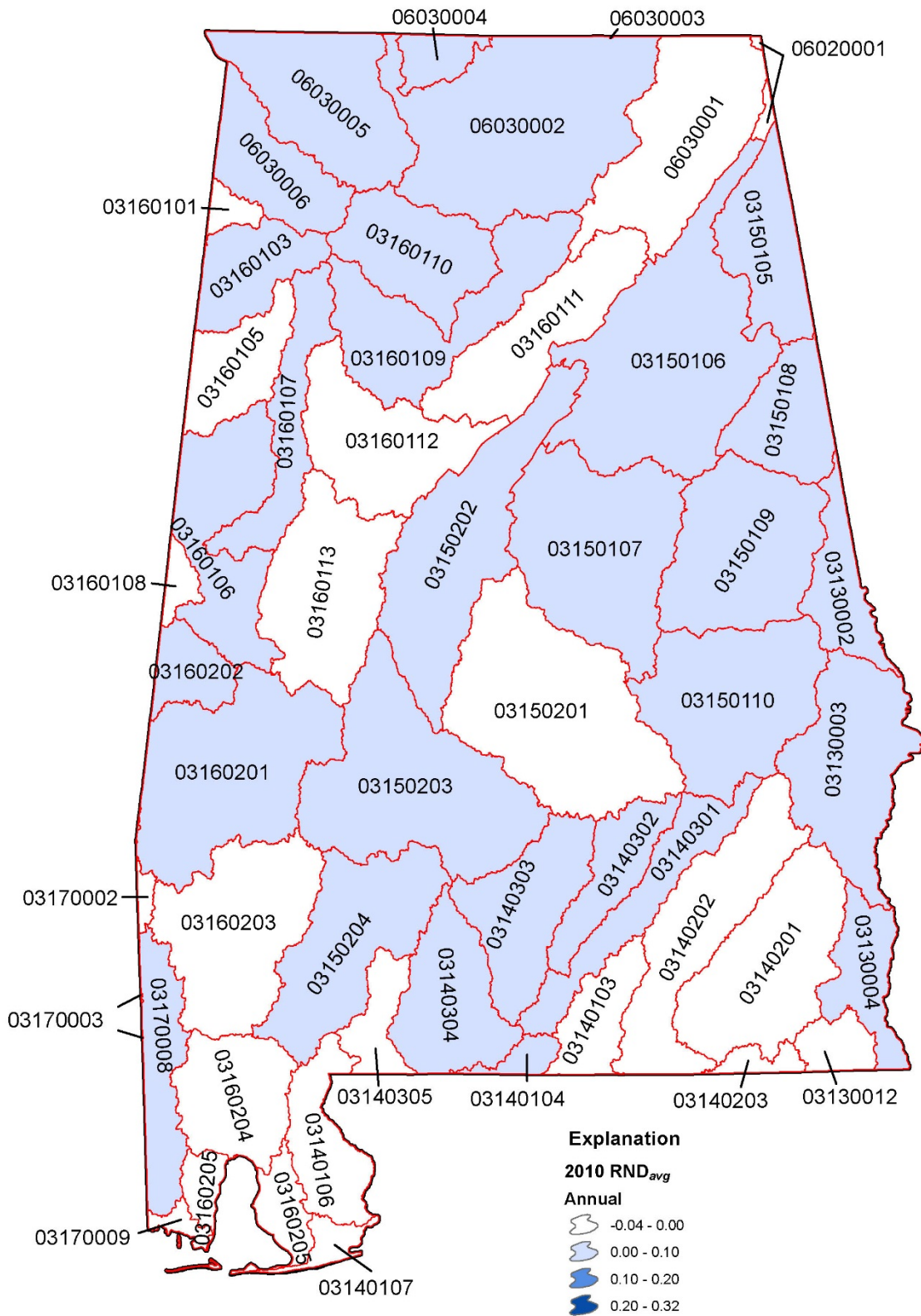
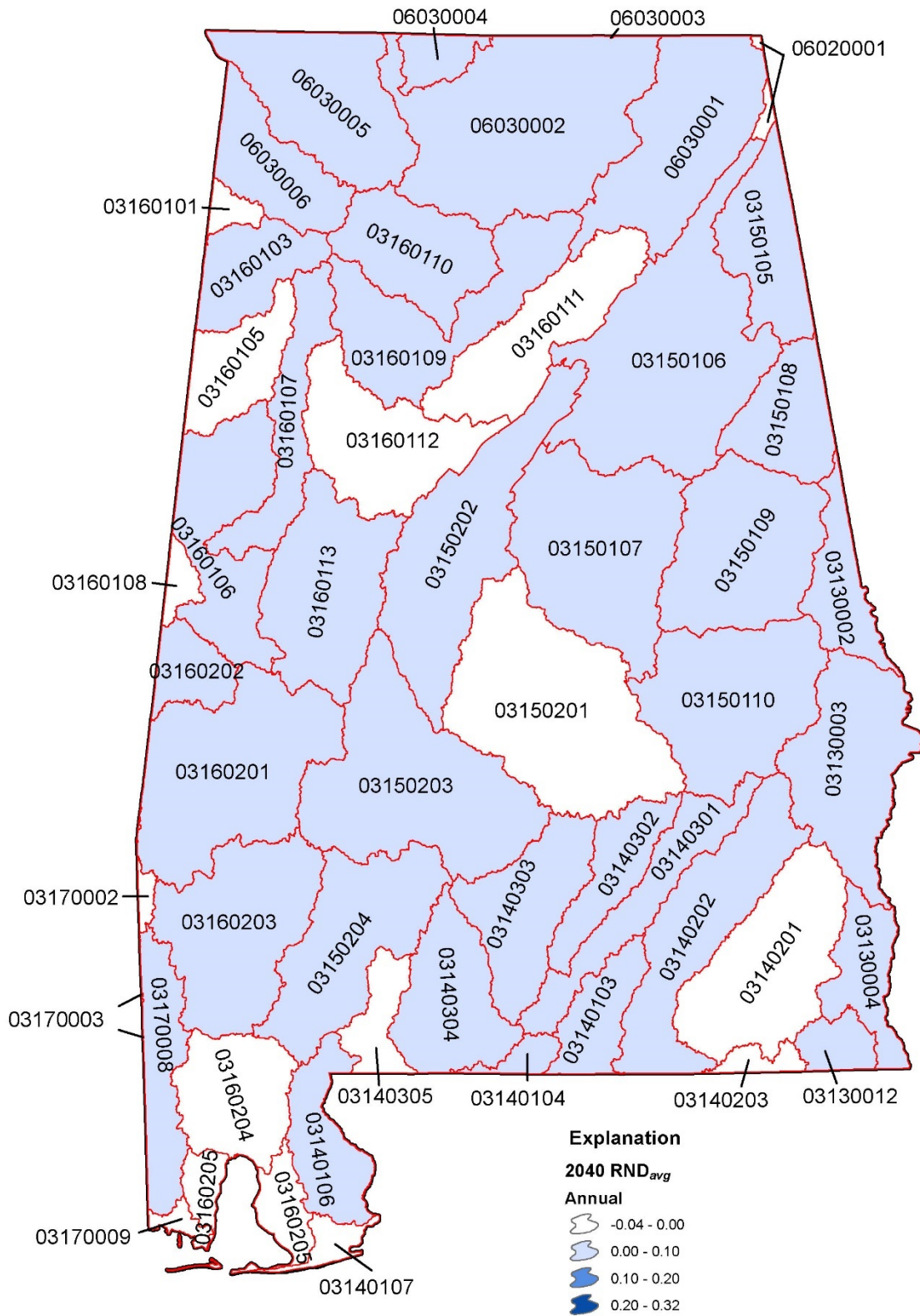


Figure 70. Map of 2040 annual average RND ratios (2040 RND_{avg}) by subbasin.



Conclusions and Recommendations

The information and data contained in this report and accompanying appendices provide a comprehensive summary of 2010 water usage, statewide characterization of surface water availability, and the resulting impacts of that use on water availability across Alabama. Furthermore, the development of future (2040) water demands provides the first projection of how water usage will change over the next thirty years and how those changes may impact water availability.

To help understand and communicate this detailed information, OWR introduced the concept of Relative Net Demand (RND) ratios. The purpose of using RND ratios of consumptive use to streamflow was to provide a method to compare water use (net consumption) to streamflow on an eight-digit subbasin scale. The results show that for a very large part of the state, current consumptive use is equal to a very low percentage of average streamflow and considerable increases in future monthly consumptive use can be sustained. In those areas with higher RND ratios, reservoir storage may provide streamflows during the driest portions of the hydrologic period of record, subject to regulatory and operational requirements.

Although Alabama's raw surface-water resources appear to be more than adequate to meet the state's needs, there will continue to be short periods of time when water may not be available when and where needed. In many instances when water shortages have occurred, those shortages are usually the result of limitations of the developed water transportation and storage infrastructure rather than the raw water availability. Therefore, water availability is not only a function of the characteristics of the raw resource, but also of the infrastructure and institutional arrangements, laws, agreements, and operating rules for withdrawing water from a stream, reservoir, or aquifer. The Alabama drought planning and response process was created to help understand these potential limitations during drought periods and identify actions that may be needed.

This report also underscores the need to conduct water withdrawal and consumption assessments using data and information from the Alabama Water-Use Reporting Program (AWURP). Under AWURP and its annual water use reporting process, OWR maintains the state's most comprehensive data repository for water-use information. This data is vital to the ability to connect the results of both the surface and groundwater capacity assessments with the impacts of current and future water withdrawals in individual subbasins to ensure water resources can continue to meet regional and local needs.

Just as important, the state must continue to support the collection of updated streamflow and reservoir data by state and federal agencies as well as other organizations. Identifying and ensuring that key streamflow gages remain active and are strategically located are not only critical to water quantity and water quality assessments but provide the detailed information necessary to better understand how and where streamflows are changing over time and how those changes are altering historic flood and drought patterns and magnitudes.

Finally, OWR looks forward to guidance from the Governor and input from the Alabama Legislature, the Alabama Water Resources Commission (AWRC), and other stakeholders on how this information can be used to enhance management of the state's water resources in accordance with the Alabama Water Resources Act. Additionally, OWR plans to update this water use and availability analysis every five years which can help guide potential enhancements to state water policies and water resource management activities as well as indicate where additional focus may be needed in the future.

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Appendices

Appendix A – Hydrologic Regions, Subregions, and Subbasins in Alabama

Appendix B – “Population Projections and Economic Forecasts for Water Use Planning”

Appendix C – “Estimates of Future Agricultural Water Withdrawal in Alabama”

Appendix D – “Forecast of Water Withdrawals for Self-Supplied Industrial Users: 2010-2040”

Appendix E – Hydroelectric Dams in Alabama

Appendix F – Subbasin Demand Summaries for 2010 and 2040

Appendix G – Monthly and Annual Flow Assessment Site Tables

Appendix H – Subbasin Flow and Demand Summaries

Appendix I – Subbasin RND Tables

Appendix J – Monthly and Seasonal RND Ratio Maps by Subbasin

Appendix K – Subbasin Monthly Flow Summaries

Appendix L – Monthly Flow Assessment Site Summaries

Appendix M – Annual Flow Summaries