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- Identified Basin Planning and Management Concerns
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- Priorities for Water Quantity Concerns

### *Section 6*

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# Concerns and Priority Issues

The assessments in Section 5 present a number of water quality and quantity concerns within the Savannah River basin. This section aggregates the assessment data to identify priority issues for development of management strategies.

## **6.1 Identified Basin Planning and Management Concerns**

Sections 4 and 5 identified both site-specific and generalized sources of water quality stressors. Some issues are limited to specific segments, but a number of water quality concerns apply throughout the basin. The criterion listed most frequently in the Georgia 2000 305(b)/303(d) List as contributing to nonsupporting or partially supporting status was fish consumption guidelines (258 of 541 miles, or 48% of the stream miles within the basin assessed as not fully supporting), followed by fecal coliform bacteria (216 of 541 stream miles, or 40% of the stream miles within the basin assessed as not fully supporting). Fish consumption and fecal coliform issues are attributed to urban runoff (air deposition with respect to mercury in fish tissue) or nonpoint sources.

Within some individual stream reaches, other sources may be of greater importance (e.g., WPCP effluent); however, urban runoff and general nonpoint sources represent a basin-wide concern. Further, strong population growth and development pressure in parts of the basin will tend to increase the importance of urban runoff as a stressor of concern. For such widespread concerns, basin-wide management strategies will be needed.

Major water quality and quantity concerns for the Savannah River basin are summarized by geographic area in terms of the concerns and sources of these concerns in Table 6-1. Table 6-2 summarizes the pollutants identified as causing impairment of designated uses in the basin; however, not all identified concerns are related to pollutant loads. Ongoing control strategies are expected to result in support of designated uses in a number of waters. In other waters, however, the development of additional management strategies may be required or implemented in order to achieve water quality standards.

In the following pages, priority water quality and quantity concerns are presented by Hydrologic Unit. For some water quality and quantity concerns, problem statements are identical for each HUC, others differ between HUCs. Detailed strategies for addressing these concerns are then supplied in Section 7.

Each concern is listed in the form of a “Problem Statement” which summarizes the linkage between stressor sources and water quality impacts. The order in which concerns are listed for each HUC should not be considered to be significant. Prioritization of basin concerns requires consensus among all stakeholders, and has not been finalized; however, short-term water quality action priorities for EPD are summarized in Section 6.2.

### **6.1.1 Problem Statements**

#### **Basinwide/Regional Issues**

Throughout the Savannah River basin, there is a concern about leaking septic tanks and malfunctioning drainfields. Septic systems, especially older models that have been operating for many years, may fail and impact groundwater and surface water resources.

Due to the pressures of growth and development, urban river corridors and forests are being reduced or eliminated. These areas provide important riparian habitat and preserve clean air, water, and a high quality of life.

#### **Tugaloo River Subbasin (HUC 03060102)**

The Tugaloo River was targeted in the 1998 Unified Watershed Assessment as one of the top three subbasins in the Savannah and Ogeechee basins where preventative action is needed to sustain water quality and aquatic resources. This rating was primarily due to the length of river miles classified as impaired.

##### *Metals*

The water use classification of fishing was not fully supported in one tributary stream segment (Eastanolle Creek) due to exceedences of water quality standards for metals. Zinc and copper standards were exceeded in the tributary stream due primarily to urban runoff and water pollution control plant discharges.

##### *Fecal Coliform Bacteria*

The water use classifications of fishing or wild/scenic were not fully supported in six tributary stream segments due to exceedences of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

**Table 6-I. Summary of Concerns in the Savannah River Basin**

Stressors of Concern	Source of the Stressor by HUC						
	Tugalo River HUC 03060102	Upper Savannah River HUC 03060103	Broad River HUC 03060104	Little River HUC 03060105	Middle Savannah River HUC 03060106	Brier Creek HUC 03060108	Lower Savannah River HUC 03060109
Metals	WPCP effluent	WPCP effluent			WPCP effluent		WPCP effluent
Fecal Coliform Bacteria	Multi-source potential	Multi-source potential	Multi-source potential	Multi-source potential	Multi-source potential	Multi-source potential	Multi-source potential
Erosion and Sedimentation	Urban and rural NPS	Agricultural NPS	Agricultural NPS	Urban and rural NPS	Urban and rural NPS	Urban and rural NPS	Urban and rural NPS
Dissolved Oxygen		Dam discharge	WPCP effluent		Dam discharge, NPS, WPCP effluent		Urban and rural NPS, WPCP
Nutrients	Agricultural and urban NPS	Agricultural and urban NPS	Agricultural and urban NPS	Agricultural and urban NPS			
Fish Consumption Guidelines	Nonpoint mercury, PCBs	Nonpoint mercury, PCBs		Nonpoint mercury	Nonpoint mercury	Nonpoint mercury	Nonpoint mercury
Water Temperature		Dam Operations					
Water Quantity							Groundwater overuse and saltwater intrusion
Threatened and Endangered Species					Robust redhorse		
Source Water Protection							Groundwater threatened

**Table 6-2. Summary of Pollutants Causing Water Quality Impairment in the Savannah River Basin**

Use Classification of Waterbody Segments	Geographic Area						
	Tugaloo River HUC 03060102	Upper Savannah River HUC 03060103	Broad River HUC 03060104	Little River HUC 03060105	Middle Savannah River HUC 03060106	Brier Creek HUC 03060108	Lower Savannah River HUC 03060109
Fishing (Support for Aquatic Life)	Metals, nutrients, introduced predation	Toxicity, nutrients, temp, low DO and flows	Low DO	Nutrients	Metals, low DO and flow	Toxicity	Metals and low DO
Fishing (Fish Consumption)	Mercury and PCBs	Mercury and PCBs		Mercury	Mercury	Mercury	Mercury
Fishing (Secondary Contact Recreation)	Fecal coliform	Fecal coliform	Fecal coliform	Fecal coliform	Fecal coliform	Fecal coliform	Fecal coliform
Drinking Water	Algae, turbidity	Algae, turbidity	Algae, turbidity	Algae, turbidity, quantity, metals	Metals, low DO, turbidity	Algae, turbidity, metals	
Wild and Scenic	Fecal coliform						

Animal waste may contribute high loads of bacterial and microbial pathogens. The 1993 Watershed Nonpoint Source Assessment (NRCS) targeted the Tugaloo subbasin for generating the second highest load of animal waste (1,626,669 tons of waste per year) in the Savannah River basin. Because this subbasin contains the least agricultural land area (48,000 total acres in 1997), the animal waste may be concentrated in large-scale confined animal feeding operations (CAFOs) or applied to a higher percentage of the total agriculture land. Fecal coliform bacteria levels may also be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, and/or rural nonpoint sources.

#### *Erosion and Sedimentation*

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

The EPA recently conducted a study of the Chattooga subbasin to determine whether waters are not meeting water quality standards because of forestry and forestry-related activities. EPA reported that the following streams were not fully supporting designated uses: Stekoa Creek and its tributary streams of Scott Creek, Saddle Gap Creek, and Pool Creek; Upper Warwoman Creek; Law Ground Creek; Roach Mill Creek; and Chechero Creek. The concern is with excessive sediment and the adverse impacts to the biological community. These streams were added to the Georgia 303(d) list in 1999.

#### *Toxicity*

The water use classification of fishing is potentially threatened in one tributary stream segment (Eastanollee Creek) due to toxicity. Aquatic toxicity tests on the Coats American, Inc. WTF effluent predicted toxicity in the receiving stream at critical, 7Q10 low flows.

#### *Fish Consumption Guidelines*

The water use classifications of fishing and/or recreation were not fully supported in Lakes Hartwell, Burton, Rabun and Tugaloo based on fish consumption guidelines due to PCB's and mercury in Lake Hartwell and mercury in Lakes Burton, Rabun and Tugaloo. The guidelines are for largemouth bass, hybrid/striped bass and channel catfish in Lake Hartwell; certain sizes of largemouth bass in Lakes Burton and Tugaloo, and for largemouth bass and white catfish in Lake Rabun.

#### *Nutrients*

The water use classification of fishing, drinking water and recreation are potentially threatened in Lake Burton, Lake Rabun and Lake Hartwell due to inputs of nutrients which may cause excess algal growths in the lakes. Nutrient sources include water pollution control plant discharges and nonpoint sources from urban and agricultural areas.

#### *Aquatic Habitat*

Trout streams in the Upper Tugaloo River subbasin are potentially threatened by erosion, sedimentation, and temperature impacts. The Chattooga River, the Talloola River, and Panther Creek are examples where the erosion and sedimentation due to gravel roads, forestry practices, and development may potentially cause problems.

### *Protection of Fisheries*

Illegally introduced blueback herring may negatively impact reservoir sport fisheries in the low-productivity, tributary reservoirs by outcompeting young-of-year sunfishes for food and by direct predation on larval and fingerling sunfishes. This threat extends from Lake Burton to the federal mainstem reservoirs.

## **Upper Savannah River Subbasin (HUC 03060103)**

### *Metals*

The water use classification of fishing was not fully supported in one tributary stream segment (Cedar Creek) due to exceedences of the water quality standard for zinc due to a water pollution plant discharge.

### *Fecal Coliform Bacteria*

The water use classification of fishing was not fully supported in five tributary stream segments due to exceedences of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

### *Erosion and Sedimentation*

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

The 1993 Watershed Non-Point Source Assessment (NRCS) targeted the Upper Savannah subbasin and reported average concentrations of sediment (14.1 mg/L) in runoff to be the second highest in the entire Savannah River basin. Agricultural runoff can be a significant source of sediment and this subbasin contains the third largest agricultural land area (119,475 acres). Other potential sediment sources include urban runoff and development (particularly construction), unpaved rural roads, and forestry practices.

### *Low Dissolved Oxygen*

The water use classification of recreation was not fully supported in one Savannah River mainstem segment due to dissolved oxygen concentrations less than standards. Low dissolved oxygen in the river segment was due to bottom water discharges from Lake Hartwell Dam.

Oxygen deficiencies are most evident in the Hartwell tailwaters, which are designated as trout waters. In the summer and early fall, dissolved oxygen levels below the dam may fall below 2.0 mg/L.

### *Fish Consumption Guidelines*

The water use classification was not supported in Lake Hartwell due to fish consumption guidelines primarily due to PCB's. In 1999, Georgia and South Carolina issued fish consumption guidance reflecting a joint reevaluation of data for Lake Hartwell. In Georgia these are for the Tugaloo Arm and for the main body in the dam forebay. In the Tugaloo Arm, hybrid and striped bass over 16 inches should not be eaten and restricted consumption of certain sizes of largemouth bass (PCB's and mercury) and channel catfish (PCB's) is recommended. In the lake main body, any size of hybrid or

striped bass should not be eaten, and restricted consumption of largemouth bass and channel catfish is recommended.

The water use classification of fishing and/or recreation was not fully supported in Lakes Richard B. Russell and Clarke's Hill (J. Strom Thurmond) based on fish consumption guidelines due to mercury. The guidelines are for largemouth bass and catfish in both lakes.

#### *Nutrients*

The water use classifications of fishing, drinking water and recreation are potentially threatened in Lake Hartwell due to inputs of nutrients which may cause excess algal growth in the lake. Nutrient sources include water pollution control plant discharges and nonpoint sources from urban and agricultural areas.

The 1993 Watershed Non-Point Source Assessment (NRCS) targeted the Upper Savannah subbasin and reported average concentrations of nitrogen (0.07 mg/L) and phosphorus (0.04 mg/L) in runoff to be the second highest in the Savannah River basin. Agriculture can be a significant source of nutrients and this subbasin contains the third largest agricultural land area (119,475 acres). Other potential nutrient sources include water pollution control plant discharges and nonpoint sources from urban areas.

#### *Aquatic Habitat*

Tailrace flows from Lakes Hartwell and Russell are primarily driven by hydropower generation schedules for supply of electricity during peak demand times. Flow rates of releases vary widely depending on demand. When not generating electricity, no minimum flow is provided. The combination of fluctuating flows and potential low flows may affect fish and other aquatic life habitat and access for recreational users.

#### *Thermal Modification*

Hydropower generation at Richard B. Russell Dam includes pumpback (reverse flow) capabilities. Water released from the Russell Dam into the Savannah River immediately upstream from Clarke's Hill is pumped back into Russell Lake. Pumping water back into the reservoir increases water temperatures in Clarke's Hill Lake and may negatively impact critical habitat for striped bass and hybrid (white x striped) bass. According to the Wildlife Resources Division trophy striped bass (20-50 lbs) in Clarke's Hill Lake may cease to exist if the pumpback units are operated without significant mitigation measures.

### **Broad River Subbasin (HUC 03060104)**

The Broad River was targeted in the 1998 Unified Watershed Assessment as one of the top three subbasins in the Savannah and Ogeechee basins where preventative action is needed to sustain water quality and aquatic resources. This rating was primarily due to the length of river miles classified as impaired.

#### *Fecal Coliform Bacteria*

The water use classification of fishing was not fully supported in ten tributary stream segments due to exceedences of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

Animal waste may contribute high loads of bacterial and microbial pathogens. The 1993 Watershed Non-Point Source Assessment (NRCS) reported that the Broad River subbasin generates, the highest animal waste load (8,888,655 tons of waste per year) in the Savannah River basin. This subbasin also contains the most agricultural land area (238,000 acres), which is partially used for grazing animals, concentrated animal feeding

operations, and animal waste application. Fecal coliform bacteria levels may also be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, and/or rural nonpoint sources.

#### *Erosion and Sedimentation*

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

The 1993 Watershed Non-Point Source Assessment (NRCS) targeted the Broad River subbasin and reported average concentrations of sediment (16.1 mg/L) in runoff to be the highest in the Savannah River basin. Agricultural runoff can be a significant source of sediment and this subbasin contains the largest agricultural land area (238,000 acres). Other potential sediment sources include urban runoff and development (particularly construction), unpaved rural roads, and forestry practices.

#### *Low Dissolved Oxygen*

The water use classification of fishing was not fully supported in two tributary stream segments (Bear Creek and Beaverdam Creek) due to dissolved oxygen concentrations less than standards due to water pollution control plant discharges.

#### *Fish Consumption Guidelines*

The water use classification was not fully supported in Nancy Town Lake based on fish consumption guidelines due to chlordane residues in bream.

#### *Nutrients*

The water use classification of drinking water is potentially threatened in Grove River Reservoir and Long Creek due to inputs of nutrients which may cause excess algal growth. Nutrient sources include water pollution control plant discharges and nonpoint sources from urban and agricultural areas.

The 1993 Watershed Non-Point Source Assessment (NRCS) targeted the Broad River subbasin and reported average concentrations of nitrogen (0.08 mg/L) and phosphorus (0.06 mg/L) in runoff to be the highest in the Savannah River basin. Agriculture can be a significant source of nutrients and this subbasin contains the largest agricultural land area (238,000 acres). Other potential nutrient sources include water pollution control plant discharges and nonpoint sources from urban areas.

### **Little River Subbasin (HUC 03060105)**

#### *Fecal Coliform Bacteria*

The water use classification of fishing was not fully supported in three tributary stream segments due to exceedences of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

#### *Erosion and Sedimentation*

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban

runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There is one stream segment listed in this subbasin as not fully supporting designated water uses based on biological community which may be due to sedimentation.

#### *Fish Consumption Guidelines*

The water use classification was not fully supported in the Little River mainstream above and below Rocky Creek based on fish consumption guidelines due to mercury. The guidelines are for largemouth bass.

#### *Nutrients*

The water use classification of fishing, drinking water and recreation are potentially threatened in the Little River Arm of Clarks Hill Lake and in Lake Wall due to inputs of nutrients which may cause excess algal growth in the lake. Nutrient sources include water pollution control plant discharges and nonpoint sources from urban and agricultural areas.

### **Middle Savannah River Subbasin (HUC 03060106)**

#### *Metals*

The water use classification of fishing was not fully supported in one Savannah River mainstem segment and in two tributary stream segments (Butler Creek). The water quality standard for selenium was exceeded in this segment.

#### *Fecal Coliform Bacteria*

The water use classification of fishing and/or drinking water was not fully supported in one Savannah River mainstem segment, and in seven tributary stream segments due to exceedences of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

#### *Erosion and Sedimentation*

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

#### *Fish Consumption Guidelines*

The water use classification of fishing and/or drinking water was not fully supported in the middle Savannah River based on fish consumption guidelines due to mercury. The guidelines are for largemouth bass and spotted sucker.

#### *Low Dissolved Oxygen*

The water use classification of fishing water and/or drinking was not fully supported in two Savannah River mainstem segments and one tributary stream segment (Butler Creek) due to dissolved oxygen concentrations less than standards. Low dissolved oxygen in the river segments was due to bottom water discharges from dams, and low dissolved oxygen in the tributary was due to urban runoff and a water pollution control plant discharge.

### *Toxicity*

The water use classification of fishing is potentially threatened in one tributary stream segment (Rocky Creek) due to toxicity.

### *Protection of Threatened and Endangered Species*

In 1998, robust redhorse fish were discovered in the Savannah River downstream of Augusta. Robust redhorse were once thought to be extinct, so there is concern to preserve the quality of its native range.

### *Aquatic Habitat*

Flows from Clarks Hill Dam are primarily driven by hydropower generation schedules for supply of electricity during peak demand times. Flow rates of releases vary widely depending on demand. When not generating electricity, no minimum flow is provided. The combination of fluctuating flows and potential low flows potentially impact juvenile nursery habitat, robust redhorse spawning and rearing habitat, and access for recreational users.

### *Groundwater Quality and Quantity*

EPD has concerns about groundwater contamination in the Augusta/Richmond County area due to past and present industrial sites. Rapid growth and expanding groundwater usage in the county may mobilize some of the contaminants located at these industrial sites, potentially affecting drinking water sources.

Radioactive contamination is a concern from the Savannah River Site (SRS), a DOE nuclear weapons support facility located in South Carolina. Radioactive contamination from SRS may enter the aquifer, pass under the Savannah River and impact users in Burke County, Georgia. The concerns date back to the 1960's and have always been related to groundwater. Elevated levels of radioactive tritium are routinely detected in fish, precipitation, and surface water. Tritium has also been detected in shallow groundwater in Burke County.

## **Brier Creek Subbasin (HUC 03060108)**

### *Fecal Coliform Bacteria*

The water use classification of fishing was not fully supported in three tributary streams (Brushy, Reedy, and Brier Creeks) due to exceedences of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources, and/or animal wastes.

### *Erosion and Sedimentation*

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

### *Fish Consumption Guidelines*

The water use classification of fishing was not fully supported in one tributary (Brier Creek) segment based on fish consumption guidelines due to mercury. The guidelines are for largemouth bass and spotted sucker.

*Toxicity*

The water use classification of fishing is potentially threatened in one tributary stream segment (Whites Creek) due to toxicity. Aquatic toxicity tests on the Thomson Water Pollution Control Plant effluent predicted toxicity in the receiving stream at critical, 7Q10 low flow conditions.

**Lower Savannah River Subbasin (HUC 03060109)**

The Lower Savannah River was targeted in the 1998 Unified Watershed Assessment as one of the top three subbasins in the Savannah and Ogeechee basins where preventative action is needed to sustain water quality and aquatic resources. This rating was primarily due to the length of river miles classified as impaired.

*Metals*

The water use classification of fishing was not fully supported in one tributary stream segment (Buck Creek) due to exceedences of water quality standards for copper due to nonpoint sources and a water pollution control plant discharge.

*Fecal Coliform Bacteria*

The water use classification of fishing and/or coastal fishing was not fully supported in one tributary stream segment (Runs Branch) and one estuarine water (Savannah Harbor) due to exceedences of the water quality standard for fecal coliform bacteria. These may be attributed to a combination of urban runoff, septic systems, sanitary sewer overflows, rural nonpoint sources and/or animal wastes.

*Erosion and Sedimentation*

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. There are no stream segments listed at this time in this subbasin as not fully supporting designated water uses due to poor fish communities or sedimentation.

*Fish Consumption Guidelines*

The water use classification of fishing, drinking water and/or coastal fishing was not fully supported in one tributary segment (Pipemaker Canal) and the Savannah River mainstem based on fish consumption guidelines due to mercury. The guidelines are for largemouth bass and channel catfish in the river, and largemouth bass in the tributary.

*Low Dissolved Oxygen*

The water use classification of fishing was not fully supported in three tributary stream segments (Buck Creek, Ebenezer Creek and Runs Branch) due to dissolved oxygen concentrations less than standards. Low dissolved oxygen in two of the tributaries was due to nonpoint sources (Ebenezer Creek and Runs Branch), and a water pollution control plant contributed to the problem in Buck Creek.

*Aquatic Habitat*

Striped bass populations on the Lower Savannah River are potentially threatened due to the tide gate constructed to control flows into Savannah Harbor. The Corps of Engineers removed the tide gate from service in 1993. Issues which persist with the striped bass fishery may be related to channel constriction caused by the berms and other

structures which have not been removed. The WRD and the Corps together with various other state and federal fish and wildlife agencies are investigating this potential problem.

*Groundwater Quality and Quantity*

Regional usage of groundwater is leading to declining water levels in the Floridian aquifer. The declining groundwater levels are allowing sea water to enter the aquifer in Port Royal Sound and begin slowly moving towards Savannah, Georgia. All municipal, industrial, and agricultural users of the Floridian Aquifer throughout this basin contribute to the salt water intrusion problem. Another concern is water needs for residential and commercial development growth in southern Effingham County. The limit on availability of groundwater is having an impact on continued development, especially with pressures to reduce usage of the Floridian Aquifer and without any other convenient source of water.

**6.2 Priorities for Water Quality Concerns**

**6.2.1 Short-Term Water Quality Action Priorities for EPD**

Section 6.1 identifies known priority concerns for which management and planning are needed in the Savannah River basin. Because of limited resources, and, in some cases, limitations to technical knowledge, not all of these concerns can be addressed at the same level of detail within the current 5-year cycle of basin management. It is therefore necessary to assign action priorities for the short term based on where the greatest return for available effort can be expected.

Current priorities for action by EPD (2000) are summarized in Table 6-3 and discussed below. These reflect EPD’s assessment of where the greatest short-term return can be obtained from available resources. These priorities were presented to and discussed with the local advisory committee in March 2000. The priorities were also public noticed and approved by the USEPA as part of the Georgia CWA 303(d) listing process in 2000 and discussed in the report, *Water Quality in Georgia, 1998-1999*.

**Assigning Priorities for Stream Segments**

For several waters in the Savannah River basin, currently planned control strategies are expected to result in attainment of designated uses. EPD resources will be directed to ensure that the ongoing pollution control strategies are implemented as planned and water quality improvements are achieved. These waters (see Appendix E) are identified as active 305(b) waters, and are the highest priority waters, as these segments will continue to require resources to complete actions and ensure standards are achieved. These stream segments have been assigned priority one.

**Table 6-3. EPD’s Short-Term Priorities for Addressing Waters Not Fully Supporting Use**

<b>Priority</b>	<b>Type</b>
1	Segments where ongoing pollution control strategies are expected to result in achieving support of designated uses; active special projects.
2	Segments with multiple data points which showed metals in excess of water quality standards and segments in which dissolved oxygen is an issue.
3	Waters for which urban runoff and generalized nonpoint sources have resulted in violations of standards for fecal coliform bacteria and waters for which fish consumption guidelines are in place due to air deposition of mercury.

Second priority was allocated to segments with multiple data points which showed metals concentrations from nonpoint sources in excess of water quality standards and to segments in which dissolved oxygen concentration was an issue.

Third priority was assigned to waters where air deposition, urban runoff or general nonpoint sources caused fish consumption guideline listings, and/or metal or fecal coliform bacteria standards violations. Waters added to the Georgia 303(d) list by EPA were also assigned to third priority. Within the current round of basin planning these sources will be addressed primarily through general strategies of encouraging best management practices for control of stressor loadings. In addition, additional work will be initiated to implement approved TMDLs on waters in this group. TMDLs have been completed on those waters in Appendix E that have a "3" in the column labeled 303(d).

Several issues helped forge the rationale for priorities. First, strategies are currently in place to address the significant water quality problems in the Savannah River basin and significant resources will be required to ensure that these actions are completed. Second, a large percentage of waters for which no control strategy is currently in place are listed due to fish consumption guidelines or as a result of exceedance of criteria of fecal coliform bacteria due to urban runoff or nonpoint sources. At the present time, the efficacy of the fecal coliform bacteria standard is in question in the scientific community, as described in Section 4.2. Also, there is no national strategy in place to address air deposition of mercury.

### **6.2.2 General Long-Term Priorities for Water Quality Concerns**

Long-term priorities for water quality management in the Coosa River basin will need to be developed by EPD and all other stakeholders during the next iteration of the basin management cycle. Long-term priorities must seek a balance between a number of different basinwide objectives. These objectives include:

- Protecting water quality in lakes, rivers, streams, estuaries and coastal waters through attainment of water quality standards and support for designated uses;
- Providing adequate, high quality water supply for municipal, agricultural, industrial, and other human activities;
- Preserving habitat suitable for the support of healthy aquatic and riparian ecosystems;
- Protecting human health and welfare through prevention of water-borne disease; minimization of risk from contaminated fish tissue, and reduction of risks from flooding; and
- Ensuring opportunities for economic growth, development, and recreation in the region.

### **6.3 Priorities for Water Quantity Concerns**

Section 5 identified that the major concern in the Savannah basin is the salt water intrusion into the Upper Floridan Aquifer which threatens groundwater supplies in the Hilton Head-Savannah and Brunswick areas. Intrusion rates, however, are quite slow, being more than a hundred years to reach Savannah. The Georgia Environmental Protection Division (GAEPD) has placed limitations on additional withdrawals of groundwater in the affected areas. This has effectively slowed the rate of additional contamination. On April 23, 1997, GAEPD implemented an Interim Strategy to protect the Upper Floridan Aquifer in the 24 coastal counties from salt water intrusion. The strategy developed in consultation with South Carolina and Florida will continue until

December 31, 2005 at which time the GAEPD plans to implement a Final Strategy that will (a) stop salt-water intrusion before municipal water supply wells on Hilton Head Island, South Carolina and Savannah Georgia are contaminated and (b) prevent an existing saltwater problem at Brunswick, Georgia from worsening. To accomplish this objective, the GAEPD will do the following:

- (1) Assuming the General Assembly provides funds, conduct expanded scientific and feasibility studies to determine with certainty how to permanently stop the salt water intrusion moving towards Hilton Head Island, South Carolina, and Savannah Georgia and how to prevent the existing salt water intrusion at Brunswick, Georgia from worsening.
- (2) Require the development of comprehensive local water supply plans in a 24 county area of southeast Georgia. These are required by December 31, 2000 from all 24 counties as a condition of issuing any future proposed public water, agriculture, or industry water withdrawal permit.
- (3) Impose caps on groundwater use in Glynn County, Chatham County, and portions of Bryan and Effingham counties, to avoid worsening the rate for salt water intrusion at Hilton -Head Savannah and at Brunswick.
- (4) Reduce groundwater use in Chatham County by at least 10 million gallons per day by December 31, 2005 through conservation and substitution of surface water for groundwater. This will be affirmed through reductions in groundwater use permits.
- (5) Allow, on an interim basis, increase in groundwater with drwalas in the area of southeast Georgia that have little impact on salt water intrusion problems.
- (6) Encourage and promote water conservation and reduced groundwater usage wherever feasible, throughout Georgia.

### **6.3.1 Priorities for Competing Demands**

With regard to the priority to be placed on meeting competing demands for future water use, the EPD (in conjunction with a broad group of stakeholders from north, central, and southwest Georgia) has established a set of “guiding principles” which will be followed in developing the state’s position regarding the allocation of water. These principles are partially based upon the prioritization given to meeting categories of water needs under Georgia law (i.e., municipal needs are the first priority, and agricultural water needs are second; all other water needs follow these two). The principles are summarized below:

1. Municipal (M&I) demands have the highest priority.
2. Agriculture needs must be satisfied.
3. Minimum instream flow rates must be met in order to preserve water quality.
4. If other demands (e.g., industrial, recreation, hydropower, navigation, and environment) can not be met under conditions of water shortage, efforts will be made to optimize the mix of economic and environmental values.

While these “guiding principles” were specifically developed to give expression to Georgia’s water needs priorities in those areas of Georgia within the study area of the Alabama-Coosa-Tallapoosa/Appalachicola-Chattahoochee-Flint (ACT/ACF) Comprehensive Study, it is likely that they characterize water needs priorities throughout the state. Thus, Georgia places highest value on the use of water for its citizens to use in drinking and water for agricultural needs.

### **6.3.2 Priorities for Additional Data Collection**

The Savannah District, U. S. Army Corps of Engineers, is also conducting a comprehensive water resources study of the Savannah River Basin. The study will utilize a basin approach in identifying and providing recommendations for meeting the various water supply, flood control, hydropower, water quality (instream flows), aquatic plant control, and recreation needs throughout the basin and beyond (i.e. interbasin transfer). A Project Study Plan was initiated in October 1999 and will be completed in September 2003. The project sponsors are the Army Corps of Engineers, the states of Georgia, South Carolina and North Carolina. The Army Corps of Engineers' Savannah River Basin study can be used as a resource for the next Savannah River Basin Plan.