

## 1. Resource Assessment

### 1.1 Study Objectives and Process

The primary objective of the statewide surface water availability assessment is to address the following three questions:

- How much water are we using?
- How much water do we have?
  - How much water is naturally available?
- How much water can we reliably use without compromising minimum instream flows?
  - What are the instream flow requirements?
  - How much water use can be sustained subject to these requirements?

The assessment evaluates the amount of water that can be consumed during dry periods without substantially altering the flow regime and the opportunities for instream and downstream use supported by that flow regime. Assessments are being conducted statewide on a sub-basin scale based on the boundaries of the resource, which in the case of surface water, are river basins (described in Section 2 of this report). The period of analysis for the resource assessment is 1939 through 2007. This 69-year period includes at least six severe, multi-year, widespread regional droughts. Droughts constitute critical periods for water availability and reservoir operations.

Unimpaired flows (UIFs) form the basic hydrologic input to the surface water availability modeling component of the resource assessment. The fundamental basis of UIFs is flow that would have historically occurred if unaltered by human activities. Removal of all human influences is not practical because they either have not been recorded or are not readily quantifiable (i.e., the effects of changing land uses on runoff and stream flow). Human influences that are quantifiable to some extent and addressed in this study include stream flow regulation effects of manmade reservoirs and water consumption for municipal, industrial, agricultural, and thermal power uses. In some reaches, groundwater pumping reduces surface water flows; these have been taken into account in the development of UIFs. Thus, while flows developed in this study are not entirely unimpaired in the literal sense, they do capture the major reversible human influences. The process for determining UIF is described in further detail in Section 4. The UIF development and resource availability assessment is performed at geographic locations along the river systems. These locations are referred to as “nodes.” There are two types of nodes, basic nodes and planning nodes, which are described in Section 2. The study process is illustrated on Figure 1-1 below.

## Synopsis of Surface Water Availability Assessment

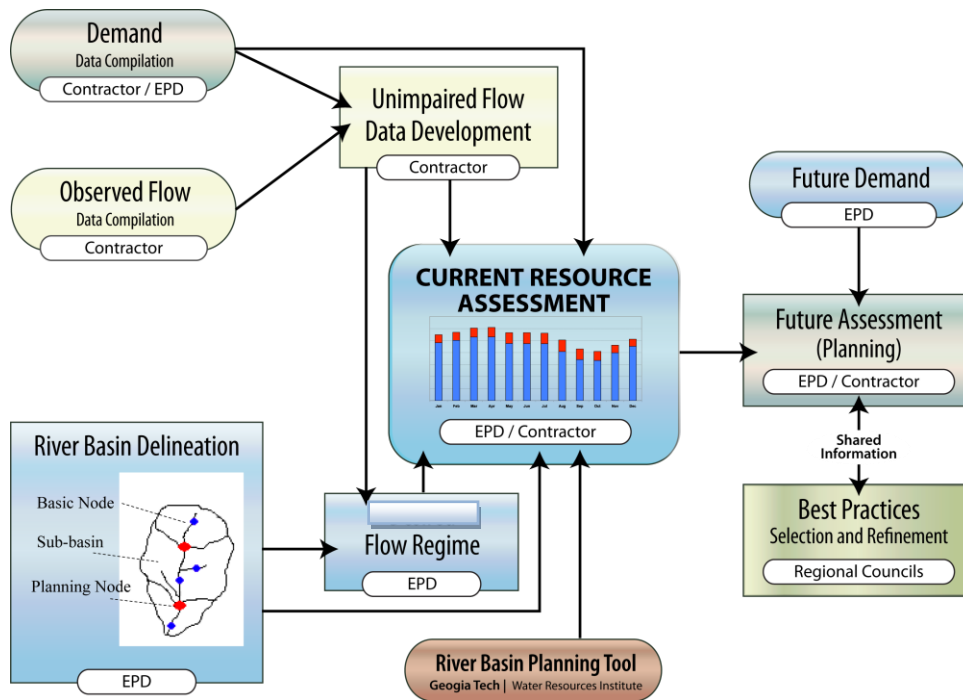


Figure 1-1 Surface Water Availability Resource Assessment Process

## 1.2 Gap Analysis

Resource assessment results are compared to current water demands to identify any gaps, or shortfalls, between supply and demand. A simplified illustration of this is provided on Figure 1-2. A preliminary assessment for current use conditions has been completed, and the results are presented in Section 7. Assessments for future conditions will be performed in the spring of 2010 at 10-year intervals between 2010 and 2050. Regional water planning councils, with assistance from the Georgia Environmental Protection Division (EPD) and the regional planning contractors, will identify the stream reaches with the most critical water availability gaps. An analysis of the gaps and their locations in the water planning region will inform the regional water planning councils' initial selection of management practices (i.e., strategies that when implemented will help close the gaps).

Synopsis of Surface Water Availability Assessment

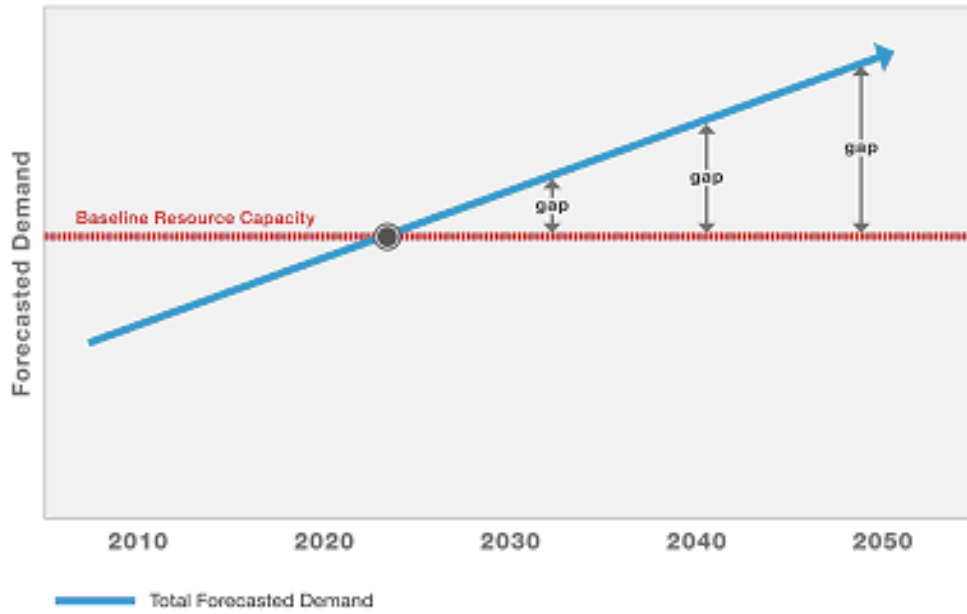


Figure 1-2 Simplified Illustration of Water Availability Gaps