US Army Corps of Engineers
Mobile District

How the ACF River Systems are Managed

Nearly everyone likes to go to the lake whether for fishing, swimming, boating, picnicking, or just sightseeing. But often the lake is not full. The water is either higher or lower than when last visited. What makes the lake levels go up and down? Are changes in some lake levels necessary? Why are some lakes always full, while others go up and down? This fact sheet will answer some of these questions.

In the southeast, rain falls in nearly every month. However, the need for water in the summer and fall can often exceed the natural supply, which is contrasted with the usual overabundance of water in the historically wet winter and spring months. One important function of lakes is to store water during abundant times so it can be used when it is scarce. Most of the big lakes were built to serve many purposes. It is in serving these purposes, which are outlined below, that water is released causing a fall in lake levels.

Water Management

The Water Management Section of the Corps meets weekly with representatives from the various areas of responsibility for which the river systems are operated - hydropower, recreation, navigation, environmental, public affairs, and others areas - to exchange information concerning the operation of the river systems. The Corps makes water management decisions for the upcoming week using the information obtained at the weekly meeting. A *District River System Status Report* is prepared each week that summarizes the conditions and activities in each of the river basins (see http://www.sam.usace.army.mil/pa/riverstatus.htm). The Corps also uses action zones to guide its operation of the lakes on the Apalachicola-Chattahoochee-Flint (ACF) system. The action zones provide guidelines on meeting the project purposes for each lake. The multiple project purposes on the ACF system include:

- Hydropower
- Navigation
- Water supply
- Water quality
- Flood control
- Fish and wildlife
- Recreation

Action Zones

Action zones have been defined for each of the major storage projects on the ACF- Buford Dam and Lake Lanier, West Point Dam and Lake, and Walter F. George Dam and Lake. They are shown on the 5-week forecast charts that are found online at http://water.sam.usace.army.mil/acfframe.htm. The Corps uses these zones to manage the lakes at the highest level possible for recreation and other purposes that benefit from high lake levels. The actions zones also provide guidance on meeting minimum hydropower needs at each project and for determining the amount of storage available for downstream purposes. The development of these zones was based on the past operation of the projects which considered time-of-year, historical pool level/release relationships, operational limits for conservation, and recreational resource impact levels. The action zones are basic guidelines for operating the river system; however, there might be other factors and activities that could cause the lakes to operate differently than the zones shown on the graphs. Some of these factors range from flood-control actions, fish-spawn operations, maintenance and repair of turbines, emergency situations such as drownings and chemical spills, drawdowns because of shoreline maintenance, releases made to free stuck barges, and other circumstances.

All three lakes are operated to maintain their lake level in the same zones concurrently. However, because the hydrologic and physical characteristics of the river system and factors mentioned above, there might be brief periods when one lake is in a lower zone than the other. If this occurs, the Corps tries to bring the lakes back in balance with each other as soon as conditions allow. By doing this, impacts to the river basin are shared equitably among the projects.

Hydropower

Hydropower was the very first form of electrical generation. Although no longer the primary source of energy for our homes, stores, and factories, water power still plays an important part in giving us reliable and relatively inexpensive energy. Most hydropower generation is *peaking* power. The generators are turned on when there is the most, or *peak*, demand for power. Hydropower can start quickly, making it an important safety feature of an electric system.

Hydropower from the Corps lakes is sold to a number of cooperatives and municipal retail suppliers of power. For the power to be sold, the government must guarantee that certain minimum amounts will be available in dry periods. These minimum generation targets along with other demands can result in declining lake levels during extended dry periods or in droughts.

Navigation

Navigation was one of the earliest uses of our southeastern rivers. Indians and early settlers used the rivers for transportation and commerce. Keeping our rivers clear for navigation was one of the first missions for the Corps of Engineers. Today's commercial barge lines still use rivers to move significant quantities of bulk materials by barge.

The Apalachicola and lower Alabama Rivers are two rivers that require flow to assure adequate depths. A minimum flow is needed which will assure useable depths. In drier months, water is taken from reservoirs to augment natural river flow. This can often result in the decline in reservoir levels. Presently, navigation on the Apalachicola River occurs only during seasonal periods, in the winter and early spring months, when there are adequate natural flows to support the required navigable depths. Other special shipments may occur on an emergency basis, but are scheduled and managed to minimize the impacts of fluctuating lake and river levels.

Water Supply

Much of the water supply in the southeast comes from streams, rivers, or lakes. Years ago there was sufficient flow in our streams and rivers, even in the worst droughts, to supply the relatively small water supply use. However, our cities and industries have grown and become more dependent on the use of stored waters to assure a dependable water supply. Whether water is withdrawn from rivers below dams or withdrawn from lakes directly, today's uses depend on stored water - water that has been held back by dams when conditions are wetter.

Water Quality

Many dams have obligations for minimum releases for environmental protection. These minimum flow releases from dams help to assure healthy aquatic life, even when treated or used waters are added at downstream points. The operation of the lake can influence water quality in the lake as it relates to nutrients and dissolved oxygen and can help benefit water quality purposes on the downstream lakes and rivers.

Flood Control

Heavy rains produce floods, which can raise a lake level several feet overnight. When floods are over, it is important to get the lake ready to store the next flood that could be coming. When a flood event is occurring, releases from the dam are curtailed or minimized until downstream conditions allow, or if the lake reaches its capacity to hold flood waters. When conditions allow, the Corps releases water to evacuate the flood waters as quickly as possible to prepare for the next potential flood event.

Not all Corps projects are designed for flood control, and no dam can prevent every flood. Some major floods will eventually exceed the flood capacity of a dam. Typically, in a major flood, the dam will help reduce the peak flow of a flood and help reduce the amount of damages that might have occurred if the dam was not there.

Fish and Wildlife

Fish and wildlife conservation is an authorized project purpose at Corps reservoir projects. The Corps recognizes the importance of keeping a healthy population of fish in lakes. Each year in coordination with the US Fish and Wildlife Service and State fishery agencies, the Corps works to hold lake levels stable during the spring fish spawn period, and to also provide releases as necessary in support of fish spawn in downstream river reaches during designated periods. At other times of the year, the Corps cooperates by manipulating releases and lake levels to enhance fisheries, both in the reservoirs and in the downstream river reaches.

Recreation

Recreation at Corps lakes has become a very important resource with a large economic expansion based on local and interstate tourism. Of these Federal projects, Lake Lanier has become the most visited Corps lake in the United States. Walter F. George and West Point Lakes also rank highly among most visited Corps projects. A wide variety of recreational opportunities are provided at these sites including boating, fishing, picnicking, camping, skiing, and sightseeing.

In response to meeting other water requirements at the projects, lake levels might decline during prime recreation periods. Large reservoir drawdowns are detrimental to recreational use as access to the water for boaters and swimmers is inhibited, safety hazards result from large trees left in the water for fishery protection, and exposed banks and lake bottoms appear unsightly. Therefore, the Corps seeks to maintain a steady, full pool, when possible.

To maximize the potential recreational use of all the projects, the reservoirs in the ACF basin are operated as a system, keeping the drawdown levels and rates balanced among the reservoirs. The Corps gives these considerations greater attention during the primary recreation season of May through early September.