

## **Lake San Cristobal Project**

Approximately 700 years ago, the Slumgullion landslide dammed the Lake Fork of the Gunnison River, impounding what is now known as Lake San Cristobal. Efforts to impound the waters of the Lake Fork of the Gunnison River above the natural lake level commenced in the late nineteenth century. Court records disclose diversion of water into “Lake San Cristobal Reservoir” and application to a beneficial use as of August 3, 1898. Plans for construction of a dam and pipeline from the reservoir were filed in the office of the State Engineer on February 18, 1910. Subsequent filings reflect approval of diligent efforts to complete construction of the project. On May 11, 1928, the district court of Montrose County entered a decree awarding the Lake San Cristobal Reservoir Priority No. 141 from the Lake Fork of the Gunnison River, determining that the reservoir had an “area [at] the high water line” of approximately 330 acres and a capacity of 9,786 acre-feet of water.

In 1956, the County sought and received from the State Engineer permission to install a baffle board on the dam for the purpose of raising the Lake level an additional eight to ten inches during low water periods in order to inundate the South end of the Lake to provide “food for the fish” and “a place for spawning”.

At that time, reservoirs with a capacity of 1,000 acre-feet or less were exempt from approval and inspection by the State Engineer, and no official state inspection record for the dam exists prior to 1971. However, since at least 1970, Hinsdale County Road and Bridge Department employees have performed annual maintenance on the dam. During the 1970s and early 1980s, the maintenance consisted of annually placing rocky material on top of the wooden structure following Spring runoff to restore any material washed away by the runoff and to maintain a stable Lake level during the Summer. By the late 1980s the wooden structure had deteriorated significantly, and the annual lake level maintenance began to be accomplished by placing large boulders in the Lake a few feet above the dam following Spring runoff in order to maintain a higher lake level during the “non-runoff time”. Various reports during this period establish that installation of the boulders raises the Lake level by two feet or more above the remains of the 1954 dam. This annual impoundment work has continued without interruption to the present.

Thus the Lake is, at least in part, a reservoir. The dam has been periodically inspected by the State Engineer since the minimum threshold for non-jurisdictional dams was reduced to a capacity of 100 acre-feet or less. Division of Water Resources records contain dam safety inspections of the wooden structure and the impoundment by boulder placement procedure from 1971 through 1990.

In December 1977, the Colorado Water Conservation Board filed an application for a water right to insure the preservation of a minimum lake level in Lake San Cristobal to protect the natural environment to a reasonable degree. The Application claimed that “The lake in its natural condition contains approximately 13,545 acre-feet and the elevation of the natural water surface is approximately 8,995 feet, as derived from the applicable U.S.G.S. quadrangle” (which depicts 40 foot contour lines), with an appropriation date of May 12, 1976. A decree awarding that

water right was entered in January, 1980. The CWCB subsequently obtained decrees awarding instream flow water rights in the Lake Fork of the Gunnison River above and below the Lake.

The drought of 2002 and 2003 drew local government's attention to the Lake as a potential source for augmentation water. Calls by senior downstream rights on the Gunnison River produced an increased awareness in the Lake Fork Basin of the need for a dependable supply of replacement water for augmentation of local depletions that does not require an exchange from Blue Mesa Reservoir. (CWCB instream flow water rights in the Lake Fork are senior to many diversions in the area, and interrupt the Blue Mesa exchange upon which their augmentation plans depend.) The County approached the District for assistance in developing an outlet structure for the Lake that could be operated to provide, among other things, a source for replacement water for the basin. To initiate the process, the District filed an Application for Storage Water Right seeking to appropriate 960 acre-feet of water - three vertical feet over 320 acres of surface area - to be stored in the Lake by means of an improved outlet works. The Application was based on general information and no plans had been developed for improvement of the existing outlet structure or construction of new outlet works.

The District entered into an Intergovernmental Agreement (IGA) with Hinsdale County and the Town of Lake City which provided that the County would create a Water Activity Enterprise that would construct a permanent outlet control structure at the site of the 1954 dam and operate a plan for augmentation to respond to calls by senior downstream water rights. The Lake San Cristobal Water Activity Enterprise is governed by a board of six directors, two appointed by

In the Fall of 2012, the Enterprise completed construction of a permanent controlled outlet structure to replace the existing rock and timber structure that (1) continues Lake level management as it has been conducted for the past many years, with greater dependability and efficiency, with no resulting negative impact on the natural environment and no new inundation of the lake shore; (2) permits storage of replacement water needed for augmentation for the Town's municipal water supply and for domestic wells in the Lake Fork Basin and a small area within the Upper Gunnison Basin; (3) simultaneously provides augmentation of the CWCB instream flow water rights in the Lake Fork of the Gunnison River downstream from the proposed structure; (4) provides the opportunity to enhance recreational use of the Lake and the fishery in the Lake and in the Lake Fork downstream from the Lake and (5) improves mitigation of high flow events in the Lake Fork of the Gunnison River.

The outlet structure is an Obermeyer Spillway Gate, a row of steel gate panels supported on the downstream side by inflatable air bladders. By controlling the pressure in the bladders, the water elevation maintained by the gate can be infinitely adjusted from fully open to fully closed. Because water is constantly flowing over the structure, and because other structural elements have been given a natural appearance, it has minimal visible impact. Gages have been installed to measure the amount of storage and the rate of release.

The outlet structure has a maximum height of approximately three feet, and fully elevated will impound approximately 950 acre-feet of water at a surface elevation of 8,995 feet above sea level. The outlet structure is operated to store water during Spring runoff, and then maintain the

surface level of the Lake at an elevation of 8,995 feet throughout the Summer and Fall through adjustments to the gate elevation. Releases for augmentation will be made as required by the Division Engineer. The Enterprise has obtained a decree for a second annual filling in the event that releases are required and water is available for storage in priority thereafter. This operation replicates the historical practice described above, but with greater efficiency and with provision for administration. The total cost of the project was \$532,340.00 - about \$560.00 per acre-foot.

### **The Plan for Augmentation.**

The District filed an Application in the Division 4 Water Court for a water storage right in Lake San Cristobal and for approval of a plan for augmentation in 2003 (amended in 2008). The court entered a decree which awarded a conditional storage right for 950 acre-feet and approved the plan for augmentation on December 5, 2011 (Case Nos. 03CW108). The storage right was made absolute in Case No. 11CW61.

The stored water is “to be used for domestic, municipal, commercial, industrial to include mining, milling and reclamation, irrigation, recreation, and fishery and wildlife habitat, and be released to augment out-of-priority depletions by such uses (including pond evaporation and livestock watering)” with a second filling for the same purposes.

The Lake San Cristobal Water Activity Enterprise operates the plan for augmentation. The Enterprise offers Augmentation Certificates for sale which entitle the holder to a release of a specified amount of water from Lake San Cristobal that will provide replacement water for out-of-priority diversions by the certificate holder during dry conditions. Augmentation releases are limited to 475 acre-feet for the first forty years of operation. The plan also dedicates 200 acre-feet to the Colorado Water Conservation Board to further protect the instream flows in the Lake Fork of the Gunnison River.