US Army Corps of Engineers®
New York District

Waterbury Dam
Waterbury, Vermont
Dam Safety Assurance Program

FACT SHEET

DESCRIPTION: Waterbury Dam is located on the Little River 3 miles upstream from its junction with the Winooski River in Waterbury, Vermont. The dam was designed by the Corps of Engineers as part of a regional flood damage reduction plan for the Winooski River basin. Construction was initiated in 1935 and completed in 1938 by the Civilian Conservation Corps under the Corps supervision. The dam was turned over to the State of Vermont for operation and maintenance as a flood damage reduction facility. Subsequently, power generation was added in 1953. Recreation was also added to the reservoir facility.

The dam consists of a rolled earthen embankment approximately 1,850 feet long at its crest, and rises 187 feet high above the original river channel. The dam contains an outlet structure, which extends through the dam. A powerhouse is located at the downstream end of the outlet at the base of the dam. The spillways are located adjacent to the earthen portion of the dam and consist of a 161-foot spillway and three taintor gates. The reservoir covers approximately 890 acres at normal summer pool.

The Corps modified the dam in 1959 increasing the dam height three feet and adding the third taintor gate to ensure that the dam could safely pass the probable maximum flood. The reservoir pool was lowered in 1981 due to concerns for the safety of the dam because of seepage and settlement in the embankment. In 1984, the Corps injected filter material, reconstructed a portion of the toe of the dam and installed grouting in the gorge area in the original river channel to remediate the seepage and settlement. A bypass conduit was also installed to increase the ability to draw down the reservoir. The reservoir was then refilled. The Corps conducted follow-up studies in 1987 to assess the work and in 1991 recommended that the State retain an engineering firm to perform periodic evaluations of the dam as the gorge area of the dam was considered suspect and should be further evaluated. The firm, Gannett-Fleming, completed their evaluations in 1999 documenting that conditions existed in the gorge area which raised concern for the safety of the dam. Additional monitoring instruments were also installed as part of the evaluation process and recommendations were made to address the conditions in the gorge area. In July 2000, the State of Vermont lowered the reservoir pool as instruments in the dam indicated further concerns regarding the integrity of the dam.

AUTHORIZATION: The original studies of the Winooski River were authorized in the Rivers and Harbors Act of 1927. The Director of Emergency Conservation Work authorized the construction of the dam in June 1933. The authority to modify the dam was made in the Flood Control Act of 1944 and subsequently under appropriations in the 1980's. The current study effort is being conducted under the Dam Safety Assurance Program under the authority of Section 1203 of the Water Resource Development Act of 1986. Appropriations with directive bill language have been made each year since 2001 by the Congress to implement the project.

STATUS: Based upon the 1999 evaluation, the State requested that the Corps conduct a dam safety assurance study on how to best address the conditions at the dam. The Dam Safety Assurance Program (DSAP) study was completed in August 2000 and approved by Corps Headquarters. Several alternatives were studied and evaluated from a cost, environmental, risk, and economic standpoint. The alternatives include complete removal of the dam, constructing a new dam, reconstructing the gorge area or constructing a cutoff wall. The recommended plan consisted of constructing a filter shaft and monitoring structure in the gorge area to correct to the seepage conditions in the gorge area and allow for monitoring of the gorge area. The estimated cost for the recommended plan was $25,678,000 and economically justified with a benefit to cost ratio of 1.3. The environmental assessment concluded that no long-term adverse impacts were expected to occur on water quality, wetlands, or forested areas as a result of the project. Mitigation for the short term construction impacts include the stabilization of the reservoir banks where erosion has occurred.

Appropriations in Fiscal Year 2001 allowed for the preparation of plans and specifications and negotiation of a Project Cooperation Agreement PCA) with Vermont for construction of the corrections to the dam. The recommended plan, the installation of the filter shaft, was modified during the Value Engineering Study in April 2001. The modified plan recommended installing the filters and cut-off wall through drilling instead of open excavation and has an estimated cost of $20,900,000. The Addendum to the Dam Safety Assurance Report, outlining the modified plan, was completed in January 2002. The final plans and specifications were completed in February 2002.

The Vermont Department of Environmental Conservation received the permit to perform the repairs from the Vermont Public Service Board in March 2002. The Project Cooperation Agreement was executed on May 20, 2002. The construction contract was awarded May 31, 2002 to RAITO, Inc, San Leandro, CA. The first partnering meeting was held on June 26, 2002 with representatives from the Corps of Engineers, contractor, several offices from the Vermont Department of Environmental Conservation, Vermont State Parks and the local offices of the Congressional delegation. Construction was initiated on July 15, 2002. The first element of construction, the installation of filters on the outlet conduit, was completed in November 2002. Work in 2003 consisted of the initiation of construction of the secant cutoff wall and seepage control wells. Construction of the secant wall and dewatering system continued through 2004, 2005, and into 2006.

The Fiscal Year 2004 Appropriations Bill directed the Corps to design and construct a repair for the concrete spillway and abutments supporting the tainter gates. The concrete was deteriorating due to an alkali aggregate reaction. The spillway repair contract was awarded to Alltech Engineering on July 5, 2005 at a cost of $693,000 and construction work was successfully completed in December 2005.

The mitigation contract was awarded to Fleet Environmental on August 23, 2005 at a price of $621,000 and work was completed in November 2006. Additional work to repair areas of the slope was performed on the mitigation site in the fall of 2007 and completed. The State of Vermont allowed the reservoir to refill in September 2006. The reservoir reached normal pool at the end of October 2006 and overall construction of the seepage control measures was substantially completed in January 2007 with punch list items completed in the fall of 2007 and formally turned over to the State of Vermont. An approximate eighteen month performance and monitoring period follows the reservoir refill to ensure that the seepage control features continue to operate satisfactorily.

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