

## Design, Construction, and Accreditation of the Oxbow Levee Project on the Cache la Poudre River Near Old Town Fort Collins, Colorado

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ANDERSON CONSULTING ENGINEERS, INC.  
*Civil • Water Resources • Environmental*

Anderson Consulting Engineers, Inc. was contracted by the City of Fort Collins Utilities Department to design, develop, and provide final construction drawings and specifications for the Oxbow Levee Project. The project included the design and construction of a 1300-foot long levee along the east bank of the Cache la Poudre River near Old Town Fort Collins, Colorado. A 120-foot long interior drainage pipe was also designed and installed through the levee to convey local runoff from behind the levee to the river. Once approved by FEMA, the Oxbow Levee removed approximately 90 residential and commercial properties from the 100-year floodplain. The staff of Anderson Consulting Engineers completed the following specific tasks for this project:

- collection of existing site data and identification of possible borrow site with material suitable for levee construction;
- coordination of the surveying efforts necessary to develop existing topography and identification of existing utilities on the project site;
- coordination with geotechnical engineers concerning the identification of a satisfactory borrow source site, the drilling and analysis of borehole samples along levee centerline, and the development of a seepage analysis model that would meet FEMA's standards;
- obtained all necessary federal, state, and local permits required for construction of the levee;
- development of a hydrologic (MODSWMM) model to determine the size of pipe needed to pass offsite flows from behind the levee into the river;
- performed hydrologic and hydraulic analyses to map the interior drainage floodplains behind the levee
- coordination with FEMA and the Army Corps of Engineers regarding the design and installation of a filter collar around the interior drainage pipe passing through the levee;
- final design and development of a 21-sheet set of construction drawings, including a grading plan, cross section information, plan and profiles of the levee and bike trail/running path, installation of new interior drainage pipe through the levee, a drainage and erosion control plan, and a landscaping/re-vegetation plan;
- development of bid documents and construction specifications;
- resident engineering services during construction that included the review of shop drawings, construction observations and documentation, coordination of weekly progress meetings, processing pay requests, and completion of as-built drawings;
- coordination between the Owner and Contractor during construction; and
- preparation of all LOMR application materials which resulted in the full accreditation of the levee by FEMA.

The Oxbow Levee Project LOMR application was submitted and subsequently approved by FEMA.



**Levee During Construction**



**Completed Levee after Construction**