More Than A Dam-Considering impacts to infrastructure prior to dam removal

Kristen Coveleski, PhD, PE Senior Water Resources Engineer, Inter-Fluve

Overview

- Case Study on the Mill River in Taunton, MA
- Overview of technical elements reviewed during the design process
- Examples of dam removals of various sizes and locations with difficult infrastructure elements that needed to be incorporated into the design

Taunton, MA





Whittenton Dam



Prior to emergency drawdown in 2005

Dam Safety Concern

Deteriorating Dam Imperils Taunton

area around the dam.

By Martha Bebinger October 18, 2005

This article is more than 18 years old.

LOCAL

Taunton dam deteriorating, downtown closed

RAY HENRY Associated Press Writer Published 1:51 p.m. ET Oct. 18, 2005 Updated 2:18 p.m. ET Oct. 18, 2005

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TAUNTON, Mass. (AP) - A dam on the rain-swollen Mill River deteriorated overnight and Taunton prepared for the worst Tuesday, evacuating residents, canceling classes and closing off the downtown amid fears of a wall of water up to 6 feet high.

Mayor Robert Nunes, at a hastily called news conference, said the situation at the wooden Whittenton Pond Dam upstream from the city took a turn for the worse about 2 a.m., resulting in an increase of water flow.

"The city of Taunton still is in a state of emergency," Nunes said. "If the dam goes, it will create massive flooding along the Mill River and into the downtown area."

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Taunton Residents Return

TAUNTON, Mass., Oct. 21, 2005



(CBS/AP) City officials reopened neighborhoods surrounding a storm-weakened wooden dan Friday, four days after evacuating the area because of fears that a collapse would flood downtown Taunton with several feet of wate

Norkers pumped millions of callons of water from the rainswollen lake above the Whittentor Pond Dam and began shoring up the battered structure Friday ahead of a new round of heavy rain forecast for the weekend.

Officials inspect the Whittenton Pond Dam. (AP Photo)

123	The 12-foot-high dam dates to
< PREVIOUS IMAGE NEXT IMAGE >	businesses about a half-mile
QUOTE	upstream from downtown Taun It was built to power a textile m
"The City of Taunton will be on high alert this weekend."	but no longer has any industrial purpose.
Taunton Mayor Pobert G. Nunes	"The City of Taunton will be on

nton will be on viayor Robert G. Nunes high alert this weekend," Mayor Robert G. Nunes said Thursday.

Some 2,000 people in the city of 50,000 had been told to leave their homes Monday. The evacuees spent the night in shelters, watching and waiting, reports CBS News correspondent Kelly Cobiella

About half were allowed back Thursday night, but hundreds of residents who live close to the dam were asked to stay away. Mayor Robert G. Nunes lifted their evacuation order Friday.

Whittenton Dam

Roadway Crossing

Roadway Crossing



After emergency drawdown in 2005

Whittenton Dam



State Hospital Dam



State Hospital Dam



Before

After

After 5+ years

West Brittania Dam





West Britannia Dam-Taunton, MA, USA





Field Survey





Dam surveying tools

- Total station
- Survey grade GPS
- Side scan SONAR
- LiDAR aerial or ground based
- CADD-photo tools

Survey Bathymetry and Depth to Refusal



Proposed Longitudinal Profile



Proposed longitudinal Profile





Survey infrastructure



Calculate Hydrology

- Flood flows (i.e. 1-yr, 100-yr, etc.)
- Fish passage flows
- Site specific flows (i.e. water withdraws)



USGS 01105730 INDIAN HEAD RIVER AT HANOVER, MA



Develop a Hydraulic Model for Existing and Proposed Conditions



Modeling Surveyed Infrastructure



Hydraulic Modeling



Evaluate Shear Stress for PC



Evaluate Shear Stress for EC vs PC



Options for Bank Stability



Immediately after construction

After 1 growing season

After 5+ years

Options for Bank Stability



Installed Riffles for Grade Control





Marland Place, Shawsheen River, MA



After

Balmoral Dam, Shawsheen River, MA



Bloede Dam, Patapsco River, MD



Coopers Mills, ME



Condit Dam, White Salmon, WA



Brown Bridge



Thank you!

Kristen Coveleski, PhD, PE Inter-Fluve kcoveleski@interfluve.com