

BCWMC Flood Control Project and Tunnel

The largest structural flood control project undertaken by the BCWMC was the Bassett Creek Flood Control Project. From 1987 – 1996, the USACE constructed the \$40 million flood control project. The project was the cooperative effort of the USACE, MnDOT, MDNR, the BCWMC, and the BCWMC member cities. The project controls flooding in portions of Golden Valley, Plymouth, Minneapolis, and Crystal and reduced flood elevations along the Bassett Creek corridor by 2 feet in Golden Valley, 1½ feet in Crystal, and up to 4½ feet in Minneapolis. The flood control project also reduced average annual flood damages by 62 percent.

With the flood control project in place, runoff from the watershed area tributary to the old tunnel no longer flows to Bassett Creek. In 2000, the BCWMC and the Mississippi WMO entered into a joint and cooperative agreement for a boundary change to reflect these changed drainage conditions. The boundary change transferred 1,002 acres from the BCWMC to the Mississippi WMO. The City of Minneapolis is currently responsible for maintenance of the old tunnel.

The principal feature of the flood control project is the new 1.7-mile tunnel through downtown Minneapolis. The tunnel was built in three phases, at a cost of \$28 million. Phase 1 was constructed in 1979, at a cost of \$12 million (\$39 million in 2014 dollars), Phase 2 was constructed in 1990, at a cost of \$2.8 million (\$5.1 million in 2014 dollars), and Phase 3 was constructed in 1992, at a cost of \$13.4 million (\$22.8 million in 2014 dollars). The tunnel diverts Bassett Creek, where it plunges underground at Glenwood and Colfax Avenues in Minneapolis, into the Mississippi River. The original tunnel, some sections of which were built more than a century ago, was undersized and deteriorating. The tunnel could no longer accommodate increased drainage and was on the verge of collapse. Such a collapse would have caused major flooding. The new tunnel provides cooperative storm drainage for Bassett Creek, Interstate Highways 94 and 394, and portions of the City of Minneapolis. The tunnel empties into the Mississippi River just south (downstream) of St. Anthony Falls.

The flood control project also included construction of the following six major features:

- Highway 100 control structure
- Wisconsin Avenue control structure
- Highway 55 control structure
- Markwood/Edgewood area modifications – Edgewood control structure, Edgewood Avenue basin, and Markwood channel improvements
- Golden Valley Country Club control structure
- Medicine Lake outlet structure

The control structures consist of low flow orifices with overflow weirs to restrict flows.

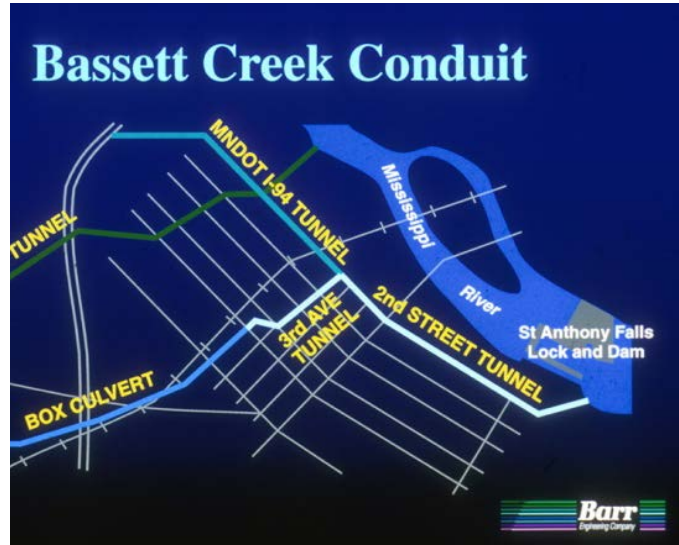
Other principal features of the flood control project include the Bassett Creek Park Pond project, replacing ten street crossings, flood-proofing five homes, and making channel improvements. In addition to providing flood control benefits, some of the project features provide water quality benefits (e.g., Bassett Creek Park Pond and the fish barrier at the tunnel). The project also included the monitoring and disposal of hazardous materials from an area of the project where contaminated soils were present (Irving Avenue dump site).

Each control structure leaves the creek virtually unaffected during normal flow conditions. For large storm events, the storage upstream of control structures generally results in higher water levels than under pre-project conditions. Maintenance may be required in storage areas after rainfall events. Each control structure lowers peak discharges immediately downstream of the structure. Implementation of all the control structures and the storage they provide resulted in a smaller tunnel and fewer measures needed to increase stream capacity.

A construction account was set up for the BCWMC flood control project. Cash contributions to the account totaled over \$6.9 million and included contributions from the member cities (assessments), MnDOT (drainage to tunnel), the MDNR (grants), Hennepin County (grant), General Mills (grant), and interest earned on investments. After paying for the project and paying back \$215,000 owed to the BCWMC Administrative account, there was \$1,535,000 remaining in the construction account. The BCWMC decided to use the remaining funds for future work related to the flood control project: floodproofing of remaining homes in the floodplain, emergency repairs to the flood control project system, and long-term maintenance and repair of the flood control project system.

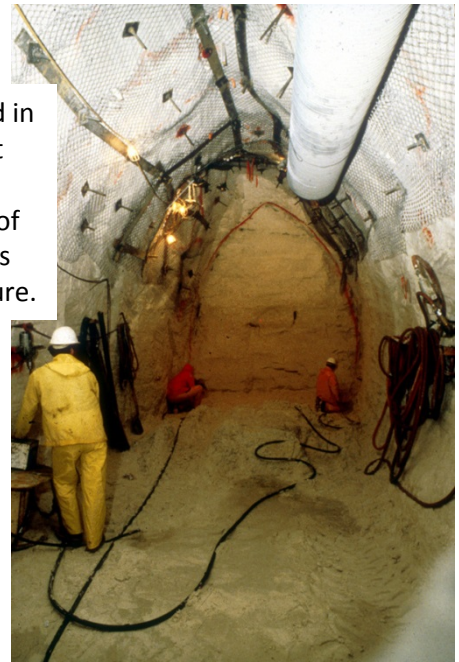
2:25 Bassett Creek Tunnel Entrance – Stop #3

From the entrance where we stand today, the Bassett Creek tunnel (conduit) carries the stream 2.4 miles underground, entering the Mississippi River below St. Anthony Falls. The design and construction of the tunnel was a cooperative project of the Minnesota Department of Transportation (MnDOT), the City of Minneapolis and the BCWMC. The tunnel was constructed in three segments (see diagram): the Second Street tunnel section, the Third Avenue tunnel section, and finally, the double box culvert section. The BCWMC's share of the total cost of constructing the three reaches of the tunnel in 2013 dollars was \$75 million - most of which was provided by the Federal Water Resources Development Act.



The Second Street tunnel, completed in 1978, is one mile in length with a 12-foot diameter equivalent arch. This section was constructed by MnDOT in a sandstone layer up to 80 feet below Second Street. It was designed to drain Interstates 394 and 94 along with parts of the City of Minneapolis and the Bassett Creek watershed.

The Third Avenue Tunnel, completed in 1990, is 0.3 miles long with a 13-foot diameter equivalent arch that was constructed by the U.S. Army Corps of Engineers, also in the sandstone. This reach includes a 35 foot drop structure.



The double box culvert (each measuring 11x11 feet) is 1.1 miles long and was completed in 1992 by the Corps of Engineers.