

## Avery Park Regional Detention Pond Fort Collins, Colorado

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The Avery Park Regional Detention Pond is located at the downstream terminus of the Clearview Channel in west-central Fort Collins, Colorado. Storm runoff collected by the Clearview Channel is directed into the New Mercer Ditch, one of three major irrigation ditches that traverse the western portion of the city. While the New Mercer Ditch is a relatively large irrigation canal it has limited capacity for safely conveying storm flows.



**Avery Park Pond Upland Area  
and Low Flow Channel**

The design of improvements to the Avery Park Detention Pond was intended to maximize the effectiveness of the pond in attenuating peak storm flows, while reducing the flooding potential for the adjacent homes, and not adversely impacting the New Mercer Ditch by releasing storm runoff to the ditch at less than existing rates for a wide range of storm events. This was accomplished by increasing the active detention volume from 15 to 25 acre-feet while lowering the 100-year ponded water surface elevation by nearly 1 foot. In addition, a multi-stage release structure was designed to limit 2-year, 5-year, 10-year and 100-year post-project condition release rates to less than existing levels. The release structure utilized a dual-stage concrete structure using outlet pipes, valved orifice outlets, and a mid-level weir configuration to control the 2-year, 5-year and 10-year releases. A large overflow weir with embankment erosion protection measures was used to control 100-year release rate. Tideflex<sup>®</sup> check valves were utilized on the low-level orifice outlets to prevent irrigation flows from backing into the pond. Riprap protection measures were designed for installation within the irrigation ditch to minimize the potential for local erosion caused by the concentration of releases from the pond.

In addition to the storm drainage and irrigation canal improvements, the project improved both the aesthetics and aquatic habitat of the pond by increasing the normal pool depth in the wet portion of the pond to 6 feet, enhancing the plan form and edge treatment of the pond, and increasing the wetland area around the perimeter of the pond.



**Avery Park Wet Pond and Outlet Structure**

Finally, a low-flow channel was designed within the normally dry portion of the pond to convey the nearly continuous spring-fed flow into the wet pond without causing erosion within the natural park area while limiting the accumulation of silt in the wet pond. The low-flow channel design included a grouted riprap outlet structure for the existing culverts under Castlerock Drive, two riprap drop structures, a natural meandering plan form, and additional buried riprap channel protection.