

## Alleviating Flooding in the Park Hill Drainage Basin

Denver, CO – Frequent flooding was no stranger to the Park Hill drainage basin in northeast Denver. The basin includes a mix of industrial, commercial, and residential properties. At least 716 structures were affected by urban flooding within the basin, including a critical infrastructure (police station) until mitigation measures were initiated.

“The city of Denver decided to construct a detention pond that would manage storm water, up to the five-year storm event,” said Saeed Farahmandi, senior storm drainage engineer for the Department of Public Works, Wastewater Management Division. “This project was the most cost effective measure to minimize flooding in that area.”

Before mitigation, the Park Hill drainage basin experienced frequent flooding due to inadequate storm sewer drains and no regional detention facilities within the 7.7 square mile basin.

In 2005, the city and county of Denver applied for a grant under the Federal Emergency Management Agency’s (FEMA) pre-disaster mitigation (PDM) grant program.

The PDM grant program is an annual competitive grant offered through statutory allocations. Almost every project type eligible for funding under the Hazard Mitigation Grant Program (HMGP) is also eligible under PDM. However, initiative projects, code enforcement and advance assistance are not allowed under this program.

The city and county of Denver were awarded the PDM grant funding for the project that totaled \$3 million. The project included using a seven-acre site dominated by abandoned buildings that was owned by Denver. The site was cleared and excavated to provide approximately 35 acre-feet of regional detention storage. Existing storm drain pipes were connected to the pond and an outlet was constructed.

About 2,600 lineal feet of 84-inch pipe and 1,275 lineal feet of 54-inch pipe were required to complete the detention pond’s outfall. The pipes were connected to a previously constructed 120-inch outfall. The point of discharge is Sand Creek, a tributary to the South Platte River.

“This detention pond works. They all do,” said Farahmandi. “Basically you’re digging a hole in the ground for water to collect and slowly move out.”

In September 2013, the state of Colorado was hit by severe storms, flooding, landslides and mudslides, but the detention pond functioned as it was supposed to.

“Approximately eight feet of water collected in the pond during the storm event,” said Farahmandi. “The pond is designed to hold 12 feet of water.”

“This pond is simple. It is not aesthetically enhanced. Our big push now is the construction of multi-purpose, aesthetically-enhanced detention and water quality ponds,” continued Farahmandi. “It’s a requirement for any new development, if bigger than one acre.”



Managing urban storm water runoff, providing storm water detention and water quality are regulatory requirements in Denver County. Storm water detention and water quality facilities must be safe, maintainable and aesthetically pleasing.

Denver's goal is to have these elements viewed as community assets rather than liabilities.

For additional information, please visit:

<http://www.denvergov.org/Portals/696/documents/SUDP/floodplain.pdf>, and

<http://www.usfa.fema.gov/pdf/efop/efo45799.pdf>