



FEMA

When It Rains Plan for Damage

Duncan, OK - The year 2007 went into the history books as the sixth wettest for Duncan, Oklahoma. Residents saw five major floods with three of them greater than 100-year flood event. The flood on June 28 resulted in a sewer main failure. But quick action and Rip Rap saved the City from unsanitary contaminants, a fate that could have occurred when Tropical Storm Erin dropped 6.2 inches of intense rain on August 19.

Duncan's Public Works Director R. Scott Vaughn said, "Included in our five storms that reached the 100-year event threshold, three exceeded those limits by either rain amounts or intensity."

Following the June flood, Vaughn's inspections on July 2 revealed damage to a 27-inch sewer main line that carried an average of 2 million gallons of raw sewage per day. The inspections further revealed that a wall separating the sewer line from the adjacent creek had eroded. Consequently, health and regulatory concerns dictated immediate emergency repairs. Within 24 hours, Vaughn ordered the sewage field pumped dry, and within the following 48 hours released bid packages for repair work. Less than five days later, the City awarded the bid and construction began.

As an experienced civil engineer, Vaughn knew Rip Rap would slow the creek's flow while protecting the embankment against erosion. Rip Rap consists of stones or rocks placed like a rock wall on a creek bank in ways that resist water conveyance, especially where waterways bend. Without Rip Rap, high velocity water on the outside of a bend increases erosion and can eventually cause a rupture in the shoreline.

On July 23, nearly 20 days after noting the damage, final inspections were completed on the last of the repair work. Less than 30 days later, remnants of Tropical Storm Erin hit the City of Duncan with enough rain to exceed the 100-year flood event criterion, putting the repair project to the test. The 450 feet of 18-inch limestone Rip Rap slowed the water flow and flattened the creek, confining it within its natural shoreline. The creek walls remained stable, and the sewer line secure.

The City of Duncan spent nearly \$150,000 on the sewer repair project that included making emergency repairs and constructing the Rip Rap shoreline. The community's 22,000 residents have now gained greater protection from improved creek walls, newly installed manholes, plugged pipe holes, and repairs to the sewer main.

Vaughn summed up the effective actions saying, "Any number of things could have gone wrong in this repair, but our staff took quick, effective action and the contractors knew how to make the final fixes to last well beyond my lifetime."



Stephens County,
Oklahoma



Quick Facts

Year:

2007

Sector:

Public

Cost:

\$147,343.00 (Actual)

Primary Activity/Project:

Floodplain Management

Primary Funding:

Local Sources