



## 91st Avenue Wastewater Treatment Plant

### Full Mitigation Best Practice Story

#### *Maricopa County, Arizona*



**Tolleson, AZ** - The 91st Avenue Wastewater Treatment Plant (WWTP), located along the Salt River in the City of Phoenix, Arizona, has been at risk from the continued soil erosion of the existing bank. It was determined that flooding greater than a 10-year event could potentially cause a 600-foot lateral migration of the north bank of the Salt River. Under this scenario the out-fall channel, the Tolleson Landfill, a portion of the chlorine contact chambers, and a portion of the south holding ponds would be destroyed.

A mitigation project was undertaken by Maricopa County and the City of Tolleson. The project extended an existing soil-cement bank approximately 2,700 feet along the north bank of the Salt River. The soil-cement bank protects the 91st Avenue WWTP and Tolleson Landfill in the City of Tolleson, Maricopa County, Arizona. Material was imported for the soil-cement mix. Excavating a V-shaped toe fourteen feet below the thalweg, backfilling against the soil-cement stabilization with the excavated material, and placing a maximum of 174 feet of the soil-cement bank stabilization below the plane of the ordinary high water mark all were done to strengthen and extend the north bank.

This project also involves the removal and replacement of all digester gas piping and the retrofit of an existing hot water loop and an existing boiler building. There also is the construction of a new boiler building.

University crews demolished the existing digester gas system, fabricated new 24-inch through 8-inch diameter stainless steel piping, and then re-piped 16 digesters at 91st Avenue. Completing this effort required an extremely intense effort, including two 24-hour shutdowns.

The benefits in avoided future damage are expected to at least equal the cost of this project.

#### Activity/Project Location

Geographical Area: **Single County (County-wide)**

FEMA Region: **Region IX**

State: **Arizona**

County: **Maricopa County**

### Key Activity/Project Information

Sector: **Public**  
Hazard Type: **Flooding**  
Activity/Project Type: **Utility Protective Measures**  
Activity/Project Start Date: **10/1997**  
Activity/Project End Date: **11/1998**  
Funding Source: **Hazard Mitigation Grant Program (HMGP); Local Sources**  
Funding Recipient: **Local Government**  
Funding Recipient Name: **City of Phoenix**

### Activity/Project Economic Analysis

Cost: **\$2,550,462.00 (Actual)**  
Non FEMA Cost:

### Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **No**  
Value Tested By Disaster? **No**  
Repetitive Loss Property? **Unknown**

### Reference URLs

Reference URL 1: <http://soilerosion.net/>  
Reference URL 2: <http://www.dem.state.az.us/>

### Main Points

- The 91st Avenue Wastewater Treatment Plant has been at risk from the continued soil erosion of the existing bank.
- prevention of damages to the waste water treatment plant will help to ensure a healthy environment post disaster
- use of excavated materials in the project controlled costs