Citywide Master Drainage Plan

City of Bartlesville, OK
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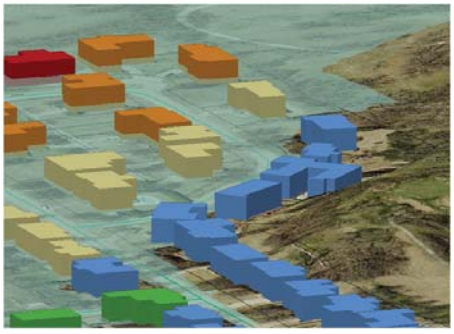
Completed in September 2004

Meshek & Associates, PLC, was selected to prepare a citywide Stormwater Master Drainage Plan for the City of Bartlesville and the tributaries of the Caney River, Oklahoma. This project culminated in the submittal of a comprehensive Master Drainage Plan which has served as the roadmap for the implementation of mitigating measures. As part of the project, the Meshek Team:

Graphics were provided to facilitate the conveyance of information to the public. Above represents the inundation conditions for a 100-year storm event.



3-D model representation were also used to communicate modeling results. The above is a 3-D representation of the same location and storm event.

- ***Prepared updated hydrologic and hydraulic computer models*** using the US Army Corps of Engineers computer programs HEC-HMS, HEC-RAS and GEO-RAS. All input and output data was developed in a georeferenced coordinate system for use in a Geographic Information System (GIS) project. The data was developed for use in the ESRI ArcGIS format, and the programs ArcView 3.2, Arclnfo, and ArcGIS 9.0 were employed to develop the GIS mapping. Existing conditions floodplains, floodplain cross section alignments, roads, stream centerlines, structures, bridges, and other similar features were incorporated into the GIS project;
- ***Collected field data to prepare bridge and culvert modeling for HEC-RAS/GEO-RAS,*** as well as confirmation of land use data and channel conditions for friction estimates;
- ***Identified the flood problem areas,*** involving an economic analysis of flood damage as well as a safety analysis for use in Flood Warning and Emergency Evacuation Plans;
- ***Developed recommendations for flood mitigation projects***, i.e. channelization, storm water detention facilities, and acquisition of repetitively flooded properties and flood prevention projects to deal with the potential increases in discharge in newly developing areas, including conceptual plans and cost estimates; and
- ***Prepared reports to assist the City with obtaining new FIS maps.*** The mapping was prepared for a DFIRM submittal for a Physical Map Revision. All plan graphics were prepared using ArcMap.

The City provided a GIS-based digital terrain model with two-foot contours and color aerial photography. In the areas just outside of the City, not covered by the two-foot contours, the digital terrain model was supplemented by using USGS 30-meter digital elevation models to fill in a small area south of the Rice Creek Basin.

The DFIRM was submitted to FEMA and accepted for incorporation as the regulatory maps.

Project Fee and Special Features

Project Fee: $280,000

Notable aspects of this study includes the use of programs HEC-HMS, HEC-RAS and GEO-RAS in a GIS environment. Hydrologic and hydraulic models were used for the identification of problem areas and formulation of a prioritized remedial plan.

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