



The Oman Quarry and Lizzie Hart Sink Watersheds are located within the jurisdiction of the Southwest Florida Watershed Management District (SWFWMD). Oman Quarry Watershed, an approximately 4 square mile urban area, is located along US 19 in Hernando County. Lizzie Hart Sink Watershed, an approximately 33 square mile rural area, straddles the boundary of Hernando and Citrus Counties. These watersheds were studied under the same contract to update the existing watershed management plans prior to submittal of updated floodplain information to FEMA.

A detailed watershed evaluation was undertaken through both desktop review and field investigation efforts. The desktop review included the incorporation of environmental resource permit (ERP) information, geotechnical soils data, and high water mark records into a project ArcGIS geodatabase. The field investigation included an inventory and conditions assessment of drainage facilities with survey to capture elevation data. The field investigation was conducted using a GPS unit and mobile GIS ArcPad software in order to easily incorporate field results into the project database.

The project included utilization of digital topographic information from LiDAR, ERP and survey data for use as a digital terrain model (DTM). A 3-dimensional surface model, a digital elevation model (DEM), was developed from the DTM for use in the hydrologic and hydraulic modeling and floodplain generation.

This project fully integrated the use of GIS in the building of a detailed hydrologic and hydraulic model (ICPR). ArchHydro tools, a surface water assessment extension for ArcGIS, were used for as part of this process. The ArchHydro tools were used to analyze the DEM and generate hydrologic features (subbasins). This included calculation of storage volume for each feature and overflow points along the boundaries. These tools were further applied to create hydraulic features network (junctions and reaches), representing conveyance (channels, culverts, outfalls, etc.) and overland flow, based upon the surface data, ERP information and collected field data (GPS data). These hydrologic and hydraulic features were then parameterized through GIS and exported to ICPR for model execution.

Model data (hydrologic and hydraulic features), model results, and other support data were stored in a topologically controlled GIS geodatabase developed in accordance with SWFWMD guidelines and specification. Floodplains were generated through automated GIS spatial analysis processes. GIS was further used to generate floodplain statistics and evaluate floodplain extents and impacts.

