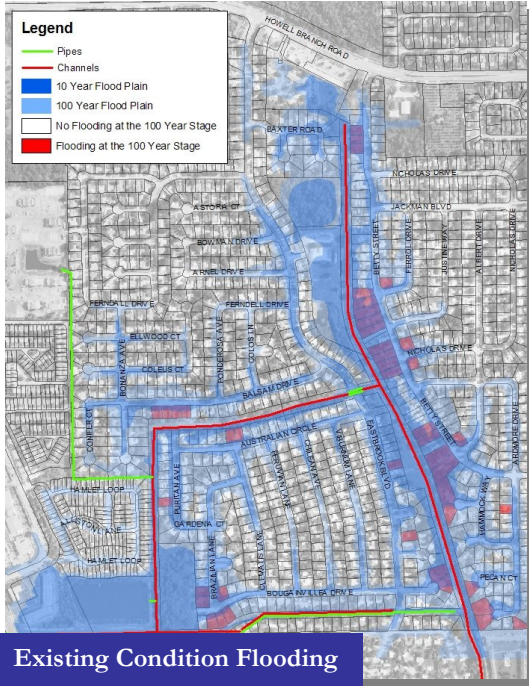


Crane Strand Regional Stormwater Facility

Watershed Modeling, Design Development and Evaluation

- Complex Hydrodynamic Modeling
- Flooding and Water Quality Issues
- Evaluation of 15 Design Alternatives
- Wet Detention, Alum Injection, & End-of-pipe
- Fast-tracked Const. Documents and Permit



Existing Condition Flooding

Stormwater Modeling / Investigation

- SAI previously completed comprehensive stormwater modeling of the 92 square mile Little Econ River watershed using the ICPR model (over 1,100 sub-basins and 1,200 reaches).
- The Crane Strand Canal watershed is highly urbanized with little stormwater treatment.
- Approximately 44 homes are predicted to flood during a 100-year storm and 12 roads are expected to flood during the 10-year storm.
- The FEMA approved ICPR model was refined to evaluate a series of design alternatives.
- Floodplains were revised for each of the design alternatives and GIS tools were used to evaluate predicted flooding conditions based on finished floor elevations.
- Pollutant loads for 12 parameters were estimated for existing and design conditions.

Project Background and Purpose

- As a result of the Engineering Study and Drainage Inventory for the Little Econlockhatchee River watershed, SAI previously identified potential flooding concerns in the Crane Strand Canal area in Seminole County, Florida.
- The Crane Strand Canal and its receiving water, the Little Econ River, were included on the FDEP's 303(d) list of impaired waters.
- The purpose of the project was to identify potential regional stormwater facility (RSF) locations along the Crane Strand Canal and evaluate a series of design alternatives to attenuate flooding problems and reduce pollutant loads to the canal.

Project Design / Implementation

- Thirteen different locations were evaluated as potential RSF sites. The sites ranged in size from 1 acre to 25 acres. Based on the results of the evaluation, six sites were considered potentially viable and practical.
- Fifteen different design alternatives were developed and evaluated. These include RSF's at each of the viable sites, alum injection at two locations, and one alternative using end-of-pipe treatment structures constructed along the main canal. A number of alternatives involve combining RSF's at multiple locations.
- Each of the alternatives was evaluated against a series of specific design criteria including hydraulic performance, pollutant removal capacity, initial cost, \$/pollutant removed, \$/structure protected, O&M requirements, implementation considerations, social acceptability, permitting, and reliability.
- The top five ranked alternatives were presented to the County for review. A summary of the results these alternatives is as follows:
 - Total pollutants removed ranged from 15,000 to 131,000 pounds per year.
 - The number of structures protected during the 100-year storm ranged from 24 to 42.
 - The number of roads protected during the 10-year storm ranged from 1 to 10.
- Two priority locations were recommended for baffle boxes. At the County's request, SAI fast-tracked the design and completed the construction documents and permitting requirements within 60 days.