

East Lee County Flood Mitigation Concept Projects

Flood mitigation benefits within the **East Lee County** study area are achieved when excess storm water is conveyed and/or stored appropriately, the concept projects reduce flooding levels and duration that inundate structures and roadways. The flood mitigation improvement would be achieved by developing flow paths to open water and/or reservoirs to store flood waters for later release following the storm event. Most concept projects in the East Lee County area share in handling excess flood water on a regional basis and this system of concept projects contributes to a flood mitigation solution. This is reflected in the Regional Model which was run with all concepts stitched together in this system approach.

Bedman Creek/Bedman Basin

Projects 1.1.1, 1.1.2, and 1.1.3 collectively benefit the Bedman Creek area and Bedman Basin by reducing flood levels in downstream sections of Bedman Creek by over four to five feet. The projects work together to store and redirect large storm flows to greatly reduce flooding impacts to the constrained natural Bedman Creek.

Localized modeling should be conducted to refine all concepts to gain an increased understanding on how these concept projects benefit the surrounding areas. Below are concept project summaries for this group, as well as their relative contribution to the area benefit.

- 1.1.1 **Dog to Hendry Drainageway (CREST)** - This conveyance and storage concept project was developed to direct flood flow away from Bedman Creek. The modeling results show approximately a 300 cfs reduction in the peak flood flow in Dog Canal that drains to Bedman Creek. Water quality treatment is an additional benefit of this project.

- 1.1.2 **Bedman Creek Overflow Bypass** - This conveyance concept project was developed for flood mitigation of the Bedman Creek area using an overflow bypass to direct flood flow to Carlos Waterway and then the Caloosahatchee River. The modeling results show a reduction in Bedman Creek flood flow of over 300 cfs, with a conveyance potential to positively redirect over 800 cfs. Water quality treatment is an additional benefit of this project.

- 1.1.3 **GS-10 Stormwater Quality Reserve:** This flood reservoir storage concept project was developed to store excess flood waters to reduce flows in Dog Canal and Hickey Canal that flow to Bedman Creek and Hickey Creek respectively. The modeling results show over a 300 cfs reduction in the peak flood flow to Dog Canal that drains to Bedman Creek and over a 300 cfs reduction in the peak flood flow to Hickey Canal that drains to Hickey Creek. Water quality treatment is an additional benefit of this project along with improved hydration of Greenbriar Swamp.

Orange River/Orange River Basin

Projects 1.1.4, 1.1.5, 1.1.7, and 1.1.9 collectively benefit the Orange River natural stream area and Orange River Basin by reducing flood levels for the 100-year storm in downstream sections of Orange River by up to approximately one foot. In addition, the model also indicated on average approximately a half foot reduction for water levels upstream within Lehigh. Below are concept project summaries for this group, as well as their relative contribution to the area benefit. Below are concept project summaries for this group, as well as their relative contribution to the area benefit.

- 1.1.4 **Buckingham Bypass Drainageway**—This conveyance concept project was developed to direct flow away from the Buckingham Road/Orange River area and to improve flood flow out of Lehigh Acres. The modeling results show a 155 cfs increase to 368 cfs flood flow from Lehigh Acres at this location, as well as, intercepting an additional flood flow reaching 1,474 cfs in the bypass drainageway. Intercepting the large flood flow significantly reduces flooding in the Buckingham/Orange River area. Both Lehigh Acres and Buckingham residents are the beneficiaries of this project.

- 1.1.5 **Buckingham Trails Water Quality Reservoir** - This flood reservoir concept project stores excess flood water until the storm event passes. This reservoir reduces the volume of flood water flow to Orange River. A benefit to Buckingham/Orange River area residents would be realized from this improvement. Water quality treatment is an additional benefit.

- 1.1.7 **Hickey Creek Overflow Bypass** - This conveyance concept project was developed for flood mitigation of the Hickey Creek area using an overflow bypass to direct flood flow to the Caloosahatchee River. The modeling results show a reduction in Hickey Creek flood flow of over 1900 cfs which is approximately what this new project is conveying. While this project provides strong flood mitigation benefit to the Hickey Creek basin, due to the Charlie Diversion connection it also can provide benefit to the Orange River.

- 1.1.9 Charlie Diversion-Hickey Canal Improvement** - This conveyance concept project was developed to direct flow away from the Orange River to the Hickey Canal and on to the Caloosahatchee River. This diversion is intended to reduce the flood flow to the Buckingham/Orange River area. The modeling results show over 400 cfs increase in flood flow away from the Orange River. Buckingham and Lehigh Acres residents are the beneficiaries of this project.

Hickey Creek/Hickey Basin

Projects 1.1.3, 1.1.6, 1.1.7, and 1.1.9 collectively benefit the Hickey Creek area and Hickey Basin by reducing flood levels for the 100-year storm in downstream sections of Hickey Creek by over six feet. In addition, Lehigh Acres and other adjacent road flooding would be reduced in extent and duration. The model indicated on average approximately a three-foot reduction for water levels upstream within Lehigh that would benefit that goal. Below are concept project summaries for this group, as well as their relative contribution to the area benefit.

- 1.1.3 **GS-10 Stormwater Quality Reservoir-** This flood reservoir storage concept project was developed to store excess flood waters to reduce flows in Dog Canal and Hickey Canal that flow to Bedman Creek and Hickey Creek, respectively. The modeling results show over a 300 cfs reduction in the peak flood flow to Dog Canal that drains to Bedman Creek and an over 300 cfs reduction in the peak flood flow to Hickey Canal that drains to Hickey Creek. Water quality treatment is an additional benefit of this project along with improved hydration of Greenbriar Swamp.

- 1.1.6 **Lehigh-River Hall to Olga Outfall** – This conveyance concept project was developed to improve flood flow out of Lehigh Acres. The modeling results show over a 100 cfs flood flow from Lehigh Acres at a water level being 5.35 feet below the top of bank at this location. Lehigh Acres residents are the beneficiaries of this project.

- 1.1.7 **Hickey Creek Overflow Bypass** - This conveyance concept project was developed for flood mitigation of the Hickey Creek area using an overflow bypass to direct flood flow to the Caloosahatchee River. The modeling results show a reduction in Hickey Creek flood flow of over 1900 cfs which is approximately what this new project is conveying. While this project provides strong flood mitigation benefit to the Hickey Creek basin, due to the Charlie Diversion connection it also can provide benefit to the Orange River.

- 1.1.9 Charlie Diversion-Hickey Canal Improvement** - This conveyance concept project was developed to direct flow away from the Orange River to the Hickey Canal and on to the Calosahatchee River. This diversion is intended to reduce the flood flow to the Buckingham/Orange River area. The modeling results show over 400 cfs increase in flood flow away from the Orange River. Buckingham and Lehigh Acres residents are the beneficiaries of this project.

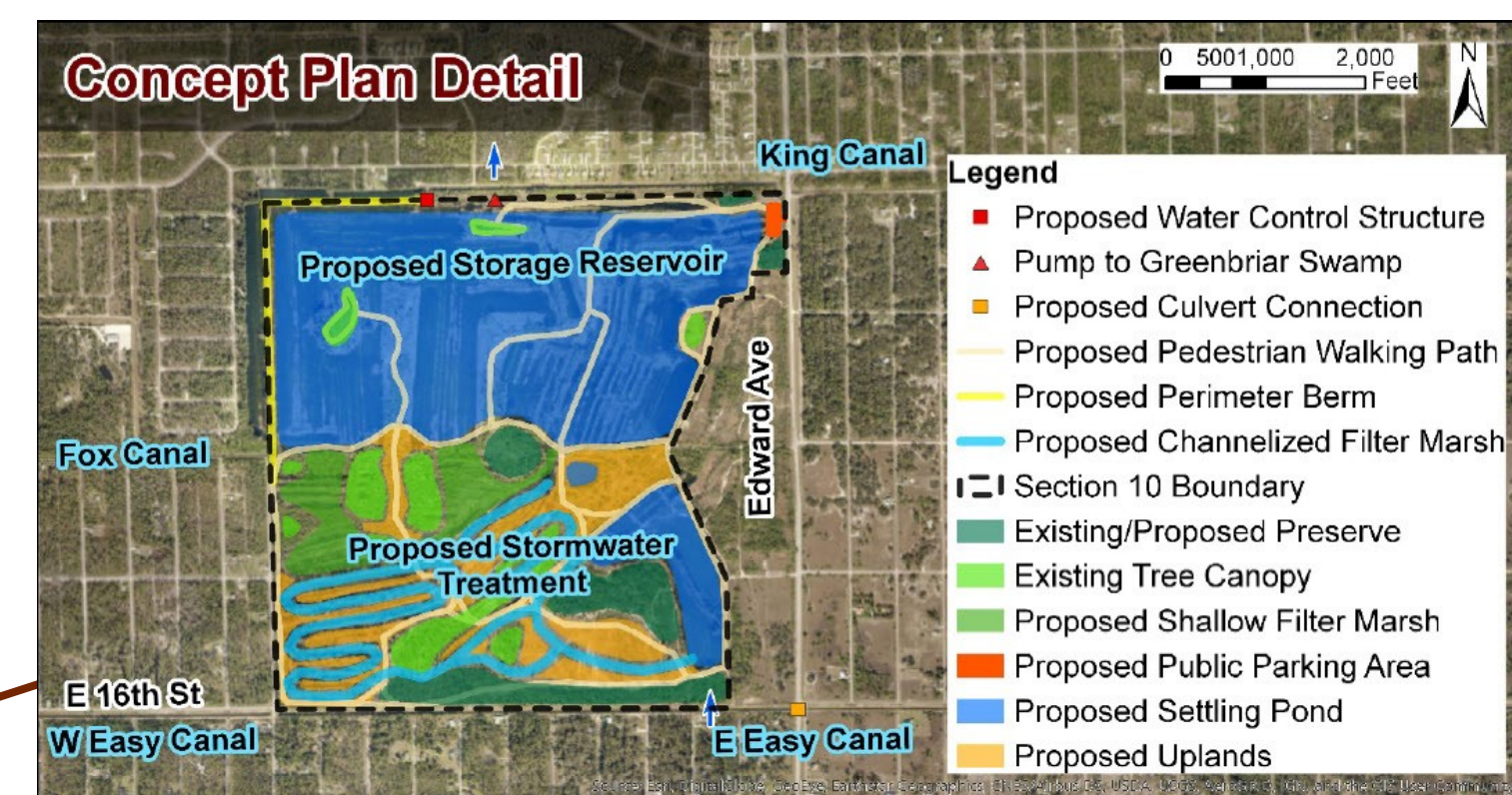
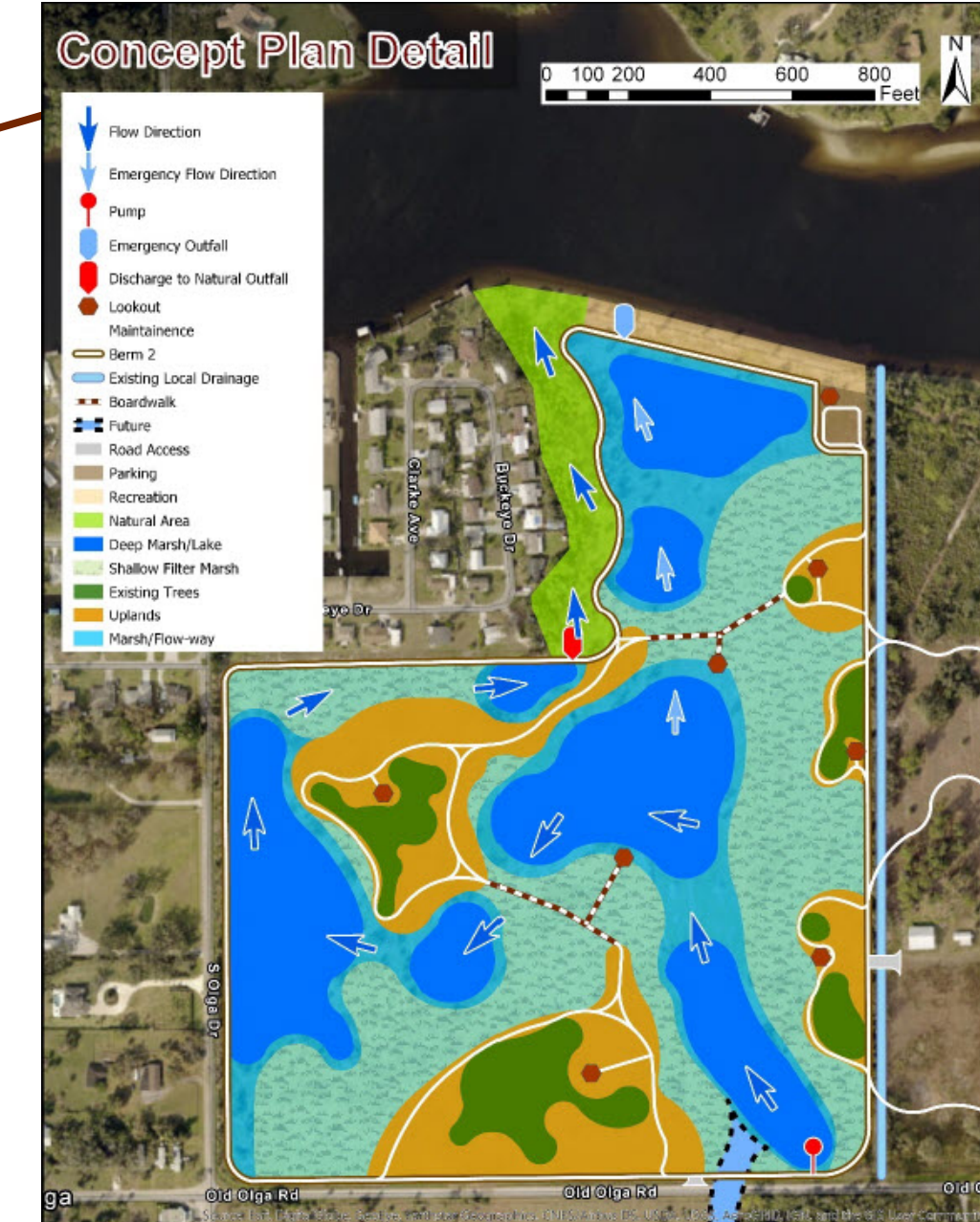
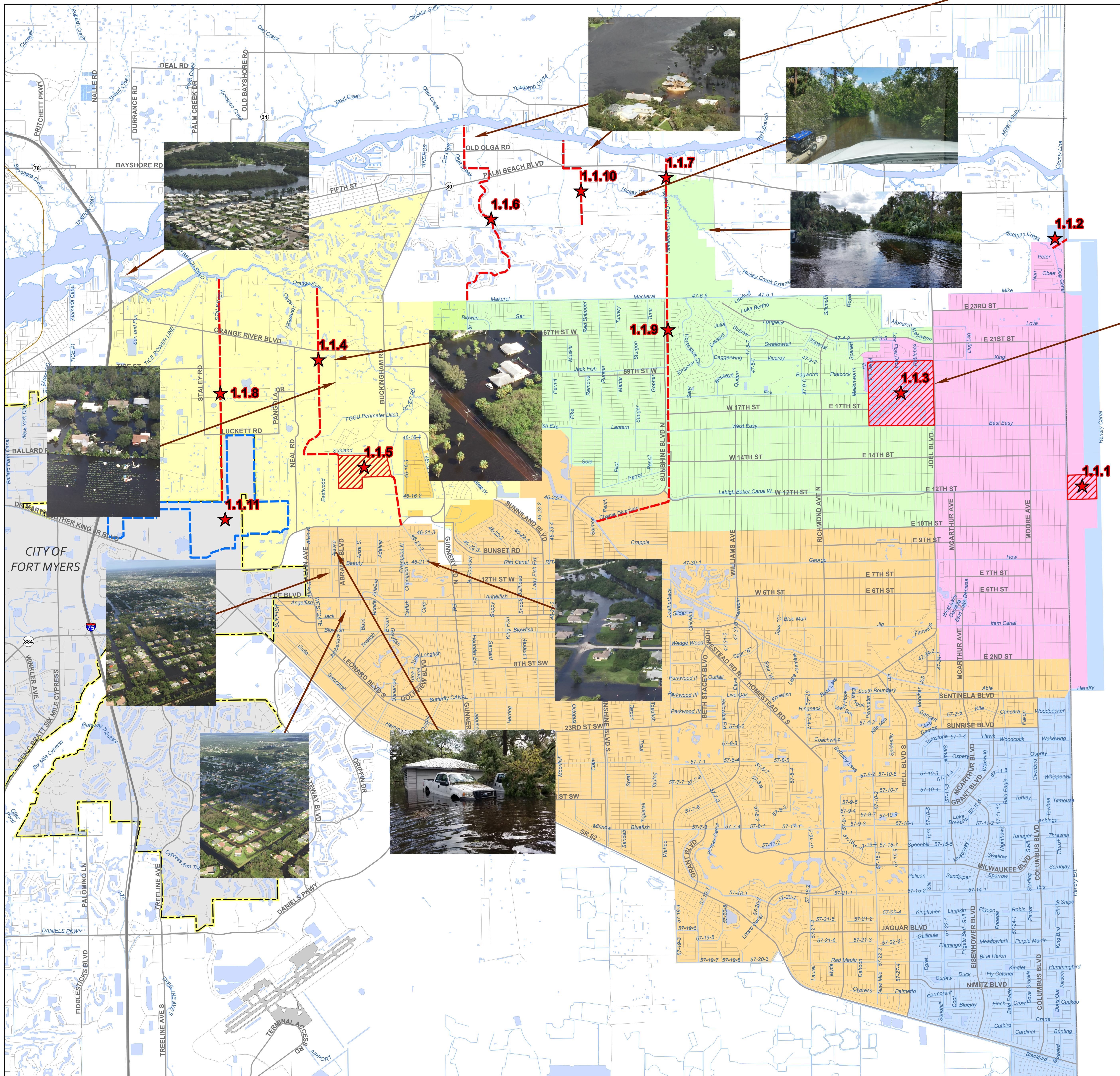
- 1.1.10 Hickey Creek Swamp Drainageway** - This conveyance concept project was developed to direct flow away from the Hickey Creek area. In large storm events the Hickey Creek Swamp and flow from the River Hall community flows towards the Hickey Creek area. The modeling results show 83 cfs flood flow towards the Caloosahatchee River. Hickey Creek residents are the beneficiaries of this project.

Western Buckingham/Staley & Lockett Road Area

Projects 1.1.8 and 1.1.11 benefit western Buckingham in the Staley Road vicinity. These projects collectively benefit this area by providing a positive drainage facility coupled with a storage component. The model showed a positive reduction in water levels for approximately 2,260 acres. Below are concept project summaries for this group, as well as their relative contribution to the area benefit.

- 1.1.8 Strayhorn Drainageway** - This conveyance concept project was developed to improve flood flow out of the Luckett Road and Staley Road area. The modeling results show a 200 to 500 cfs flood flow from the area and a water level at the top of bank for this location. The Luckett Road and Staley Road area residents are the beneficiaries of this project as well as the beneficiaries of the Six-Mile Cypress North concept project that has a connection to this concept project.

- 1.1.11 **Six-Mile Cypress North Catchment Reservoir** - This flood reservoir concept captures all the rainfall from storm events. If desired, flow may be directed to Six-Mile Cypress Slough to the south or Strayhorn drainageway and the Orange River to the north. An additional benefit is available to direct flood water in the slough toward the Orange River. The hydrologic environmental enhancement is a primary benefit for the concept project. Providing a flood flow path for residents in the Six-Mile Cypress Slough basin would be an additional benefit.

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