

WITHLACOOCHEE RIVER AND SUGAR CREEK FLOODING ANALYSIS FOR THE CITY OF VALDOSTA

Lowndes County, Georgia Planning Assistance to States

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U.S. Army Corps of Engineers, Jacksonville District

6 May 2014



PURPOSE OF THE ANALYSIS

- Provide an analysis of potential structural and non-structural solutions*
- Suggest an economically justified solution for flood risk reduction in the study area
- Establish potential Federal interest in pursuing future USACE flood risk management studies related to the study area toward a more holistic approach
 - Continuing Authority Program
 - Watershed Study Authority Florida

* Preliminary analysis and not build-ready (equivalent to a Reconnaissance Study under USACE authority)



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MODELING CONCLUSION

- Modeling of existing conditions (10-, 50-, and 100-year storm events) **indicates flooding is due to rising water in the Withlacoochee River and Little River which backs up into Sugar Creek and Two Mile Branch**
- Conclusion confirmed anecdotally from observations during the 2009 and 2013 flood events, termed as “sunny-day” flooding (flooding occurring several days after the immediate rainfall event)

USACE will provide the certified Hydrologic Engineering Centers River Analysis System (HEC-RAS) model and supporting data to the City of Valdosta

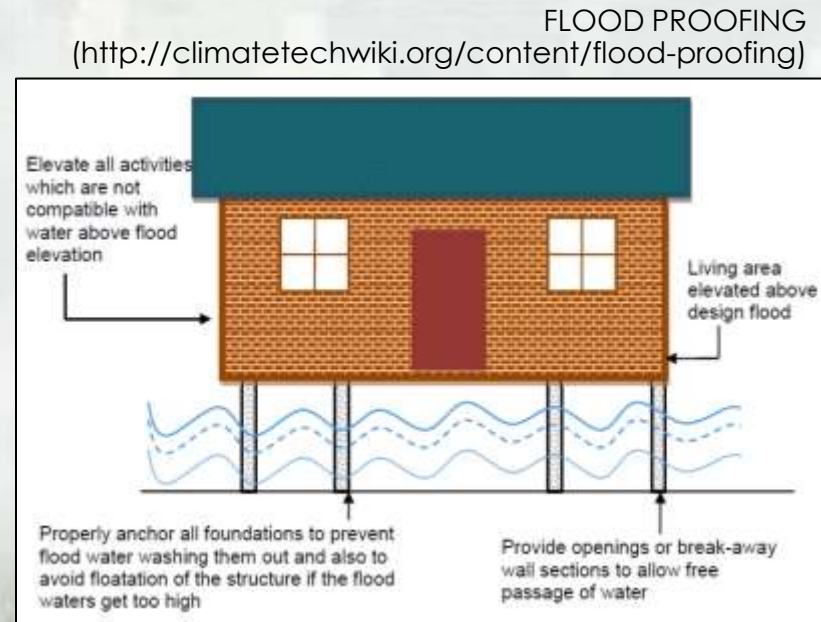


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PLAN FORMULATION

Several non-structural and structural alternatives were identified, compared and evaluated, resulting in one potential, feasible local solution for the purpose of this report

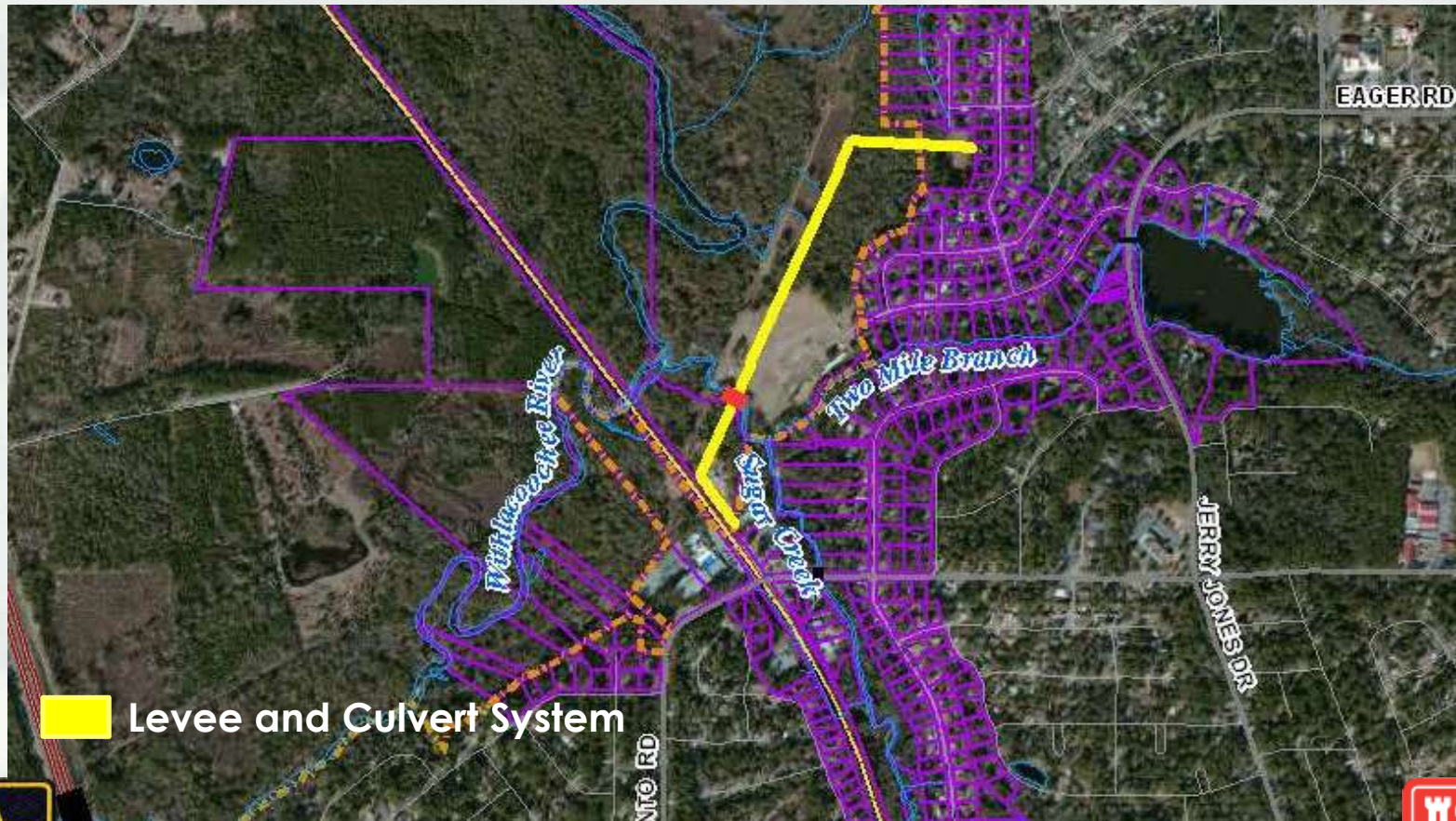
- Alt 1:** Full acquisition
- Alt 2:** Elevation
- Alt 3:** Elevation and acquisition
- Alt 4:** Flood proofing
- Alt 5:** Channelization of the Withlacoochee
- Alt 6:** Alteration of the confluence of the Withlacoochee River and Little River
- Alt 7:** Flood control levee and structure in Sugar Creek at the confluence with the Withlacoochee River



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ALTERNATIVE 7

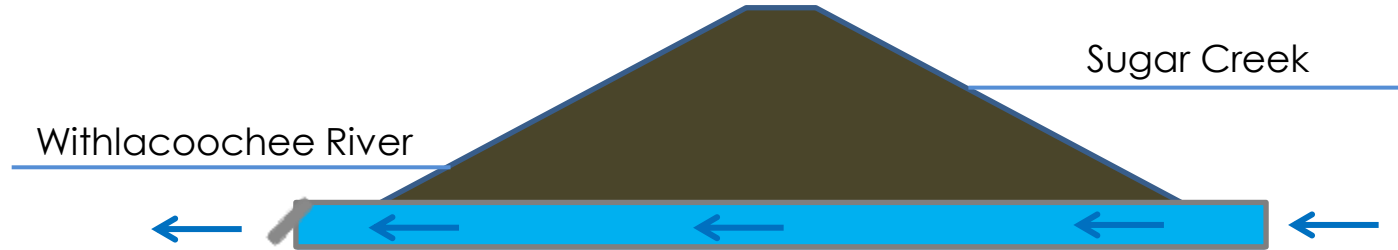
After comparison and evaluation of all alternatives using USACE criteria, Alternative 7 was considered to be the most effective at reducing flood risk in the study area, most cost effective, and having the least environmental impacts



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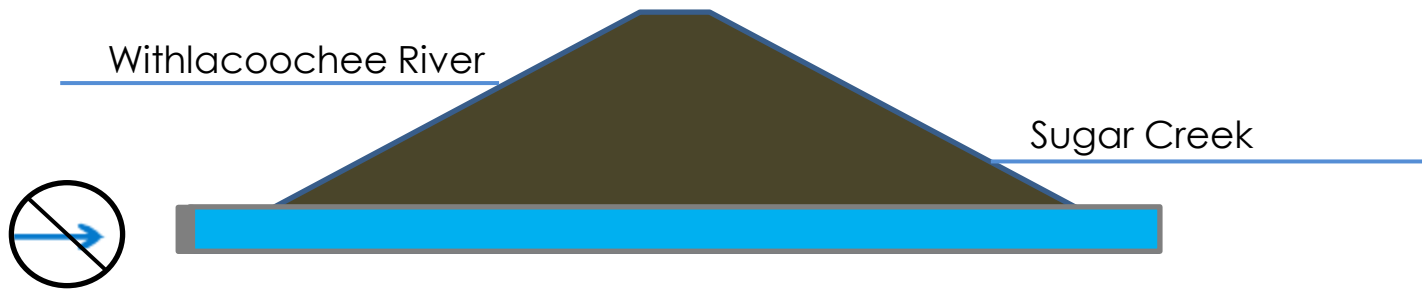
ALTERNATIVE 7 - LEVEE AND CULVERT CONCEPT

FLOW OF WATER WHEN WITHLACOOCHEE RIVER HAS LOWER WATER LEVELS THAN SUGAR CREEK



Flap gate open – water flow

FLOW OF WATER WHEN WITHLACOOCHEE RIVER HAS HIGHER WATER LEVELS THAN SUGAR CREEK



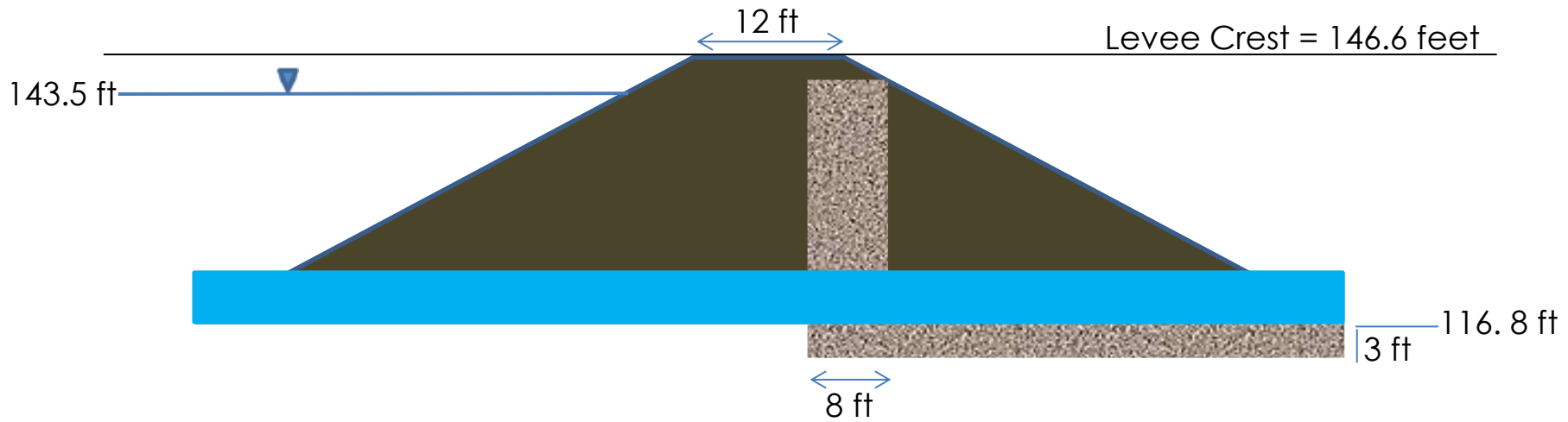
Flap gate closed – no water flow






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ALTERNATIVE 7 FEATURES

- Levee Length = 3,950 feet
- Slide slopes = 3H to 1V
- Average Height = 24 feet
- Top Width = 12 feet
- Quantity for Levee = 308,000 cy
- Culvert Structure = 6 barrels (6x6 feet each)



	Six (6 x 6 foot) Culvert Pipes
	Fine aggregate
	Levee

* Not to Scale, Elevations are in NAVD88



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ALTERNATIVE 7 BENEFITS

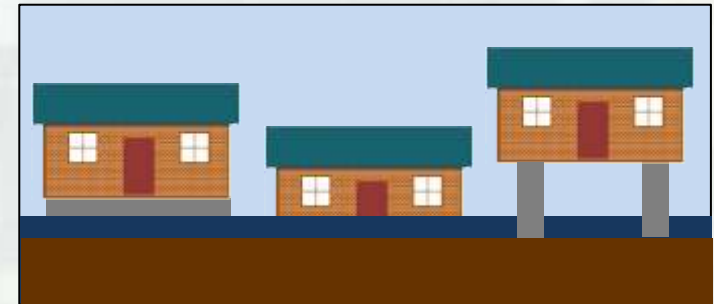
This plan would not prevent flooding but **would reduce the depth and duration of flooding**

DEPTH

Modeling Results: water surface elevation reduction

- 10-year event: Reduced by 0.1 feet
- 50-year: Reduced by 1.7 feet
- 100-year: Reduced by 2.8 feet

Benefit: potentially less inundation due to lower water stages; actual level of benefit depends on home elevation



DURATION

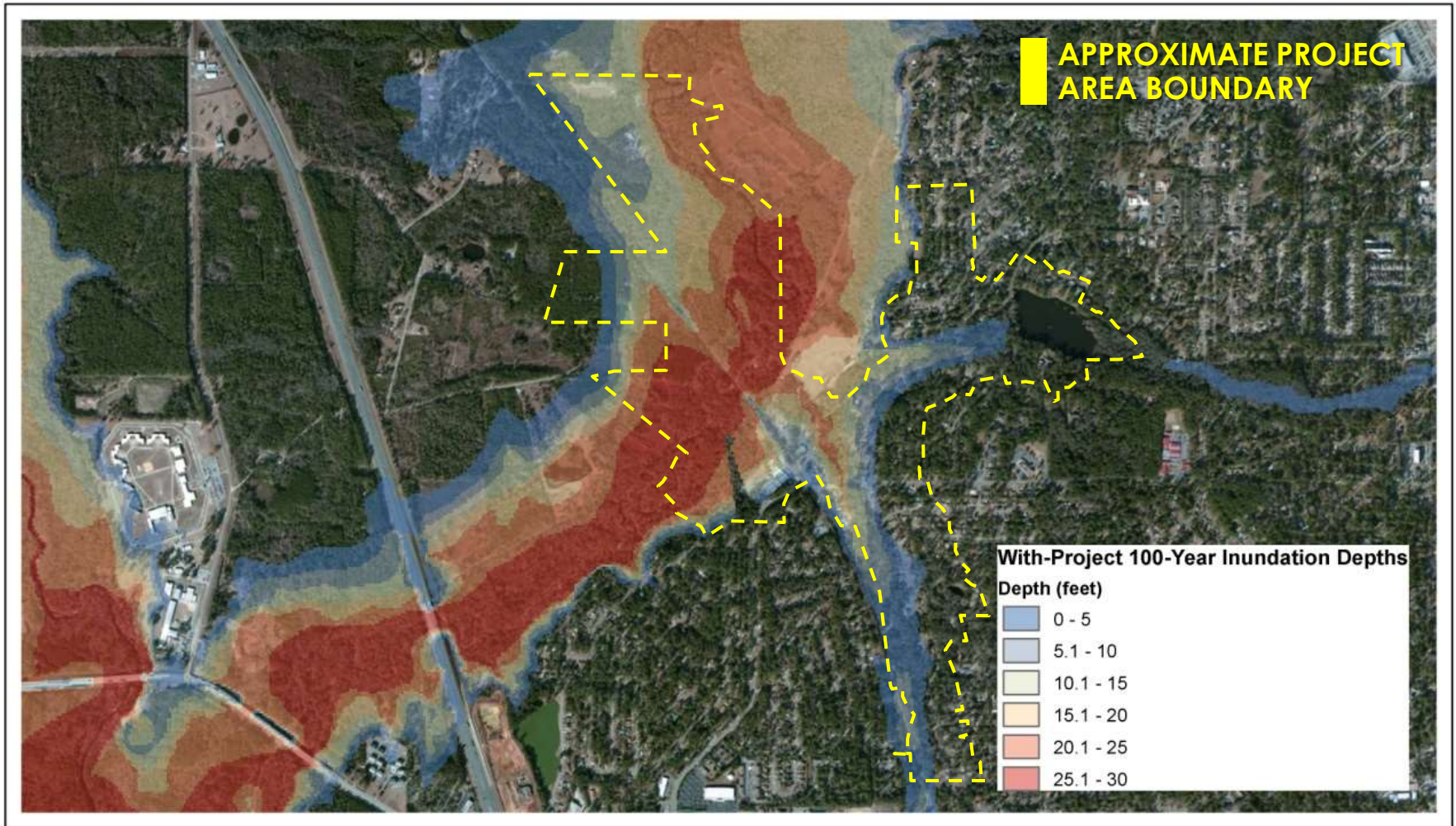
Modeling Results: reduction in flooding (also, the duration of flooding, in some cases, was reduced from days to a few hours)

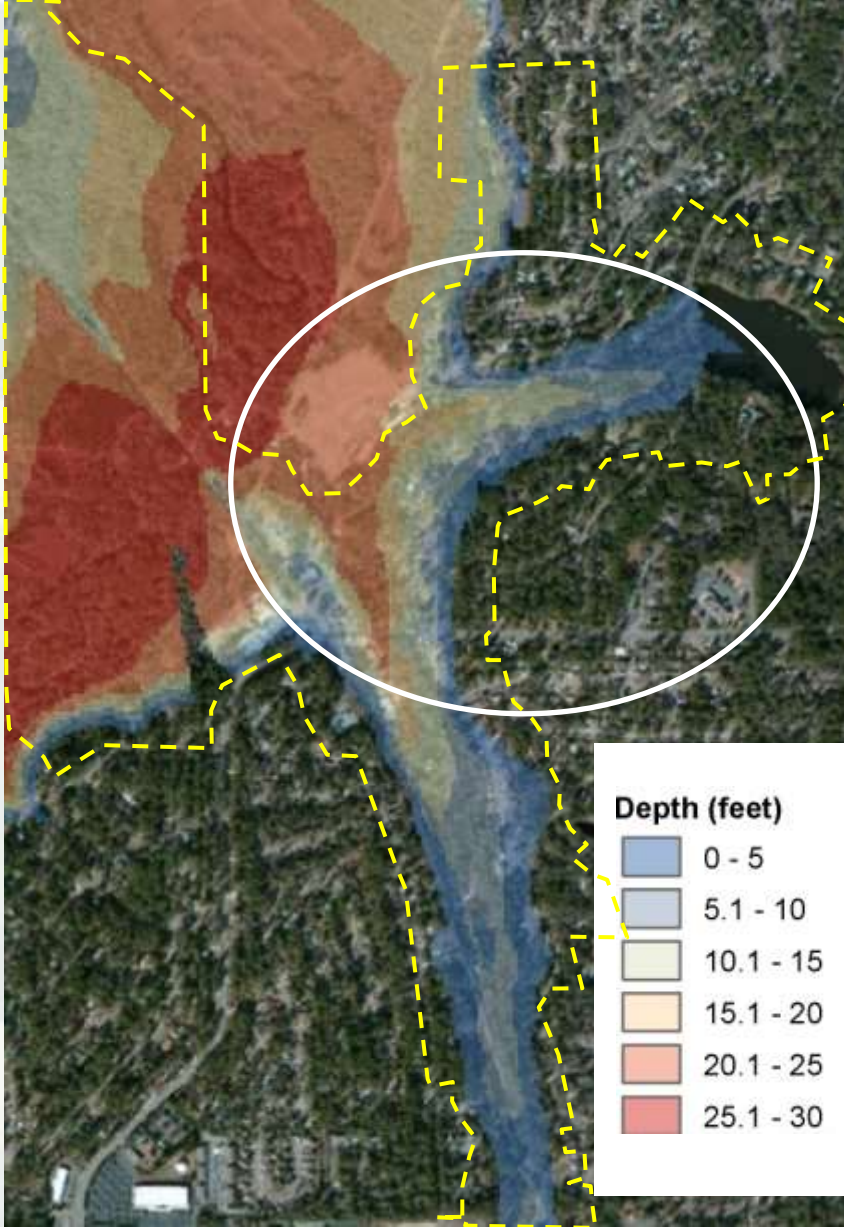
Benefit: more time for homeowners and businesses to access property; potentially less damage due to less standing water



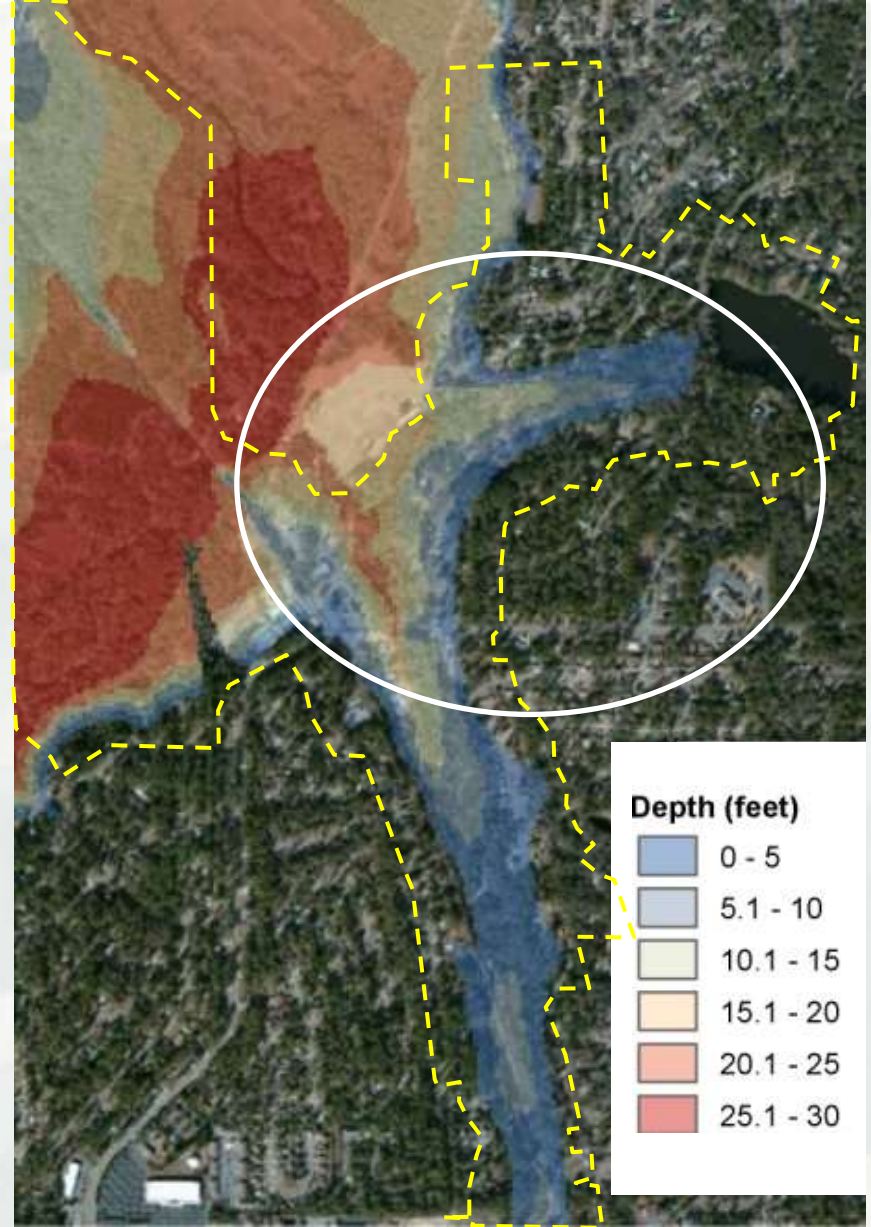
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With-Project Conditions
100-Year Flood Event





100-YEAR EVENT
EXISTING CONDITIONS



100-YEAR EVENT
WITH-PROJECT CONDITIONS

ALTERNATIVE 7 - COST AND ASSUMPTIONS

The preliminary cost estimate did not include real estate, operation and maintenance, and assumed onsite borrow material. Cost would increase if onsite material is not available.

TOTAL COST	
Mobilization, Demobilization, Preparation Work	\$268,391
Clearing and Grubbing	\$26,537
Levee Construction	\$1,670,699
Care and Diversion of Water	\$178,927
Culvert Structure	\$1,392,683
Site Grading and Landscaping	\$44,449
TOTAL COST	\$3,581,686

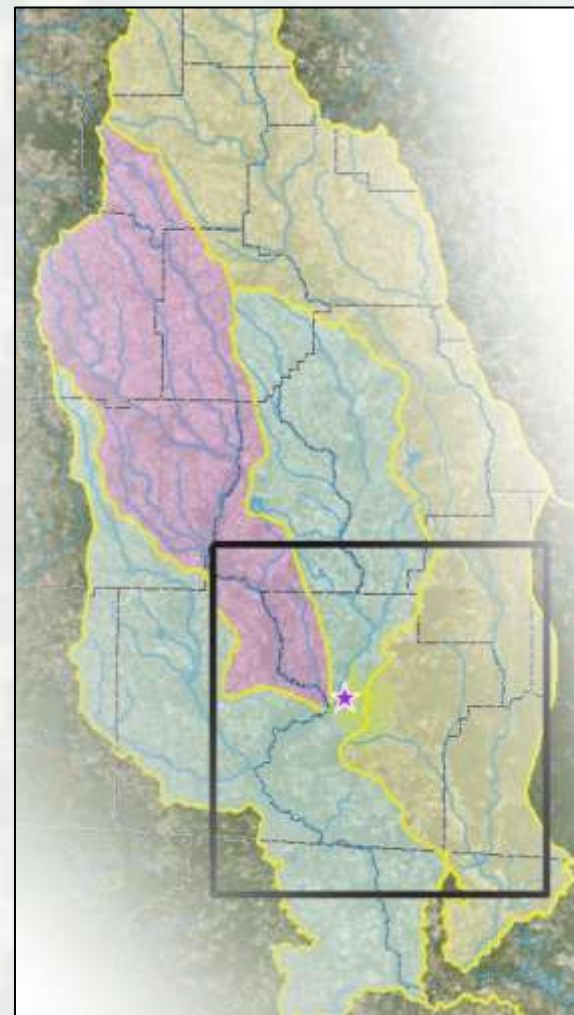
Benefit to Cost Ratio Estimated to be 1.4



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CONCLUSION

- Alternative 7 could reduce depth and duration of flooding, but not prevent it
- The underlying problems related to the frequency, depth and duration of water are due to the overall river basin and watershed complexity – which a future study could address in greater detail and more holistically
- This report established that there could be Federal interest in pursuing future flood management risk studies under other USACE authorities
 - Continuing Authority Program
 - Watershed Study Authority



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Withlacoochee River and Little River Flood Tracking Chart and Valdosta Sanitary Sewer System Improvements Update

May 6, 2014

Neighborhood Meeting

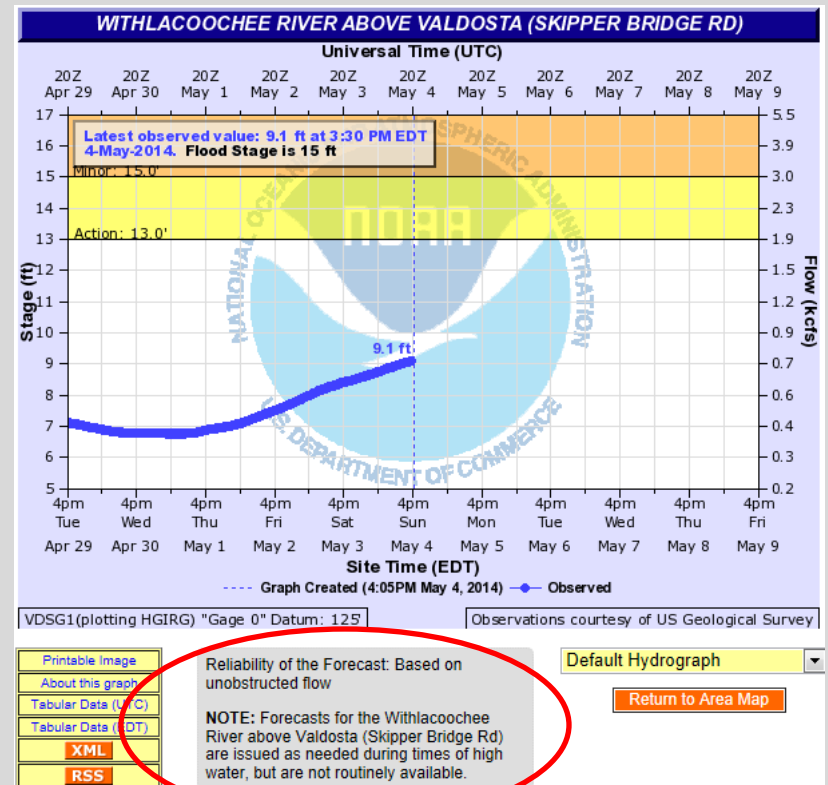
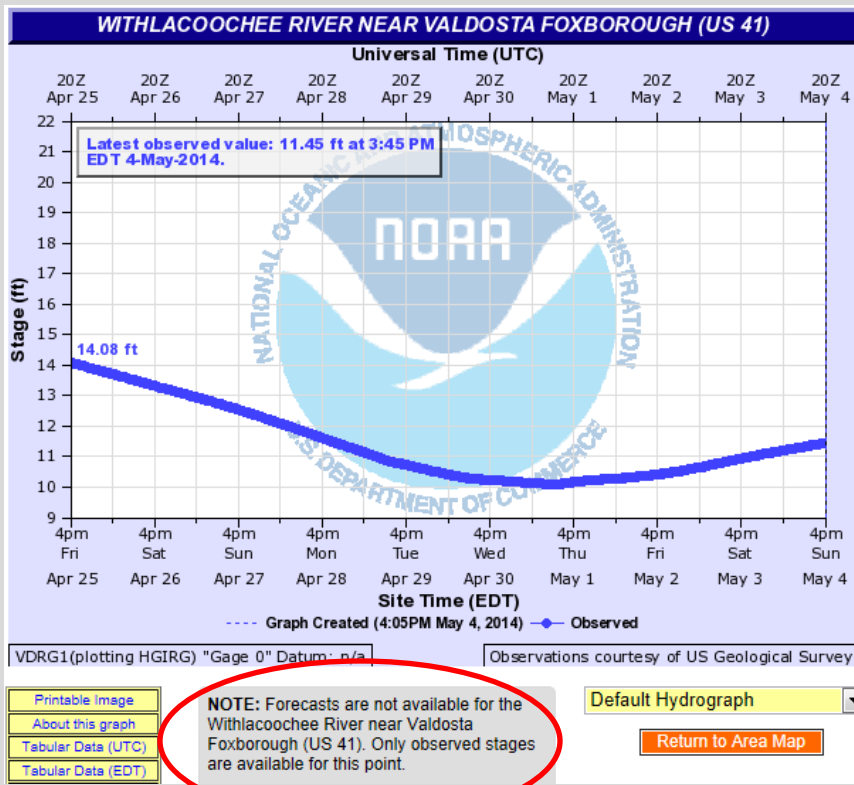
City Hall Annex – Multipurpose Room



Withlacoochee River and Little River Flood – Tracking Chart

Works in conjunction with the USGS real time streamflow conditions website:

<http://waterdata.usgs.gov/usa/nwis/rt>



Valdosta Sanitary Sewer System Improvements Update

New Force Main Project / New Withlacoochee Wastewater Treatment Plant

Force Main Project:

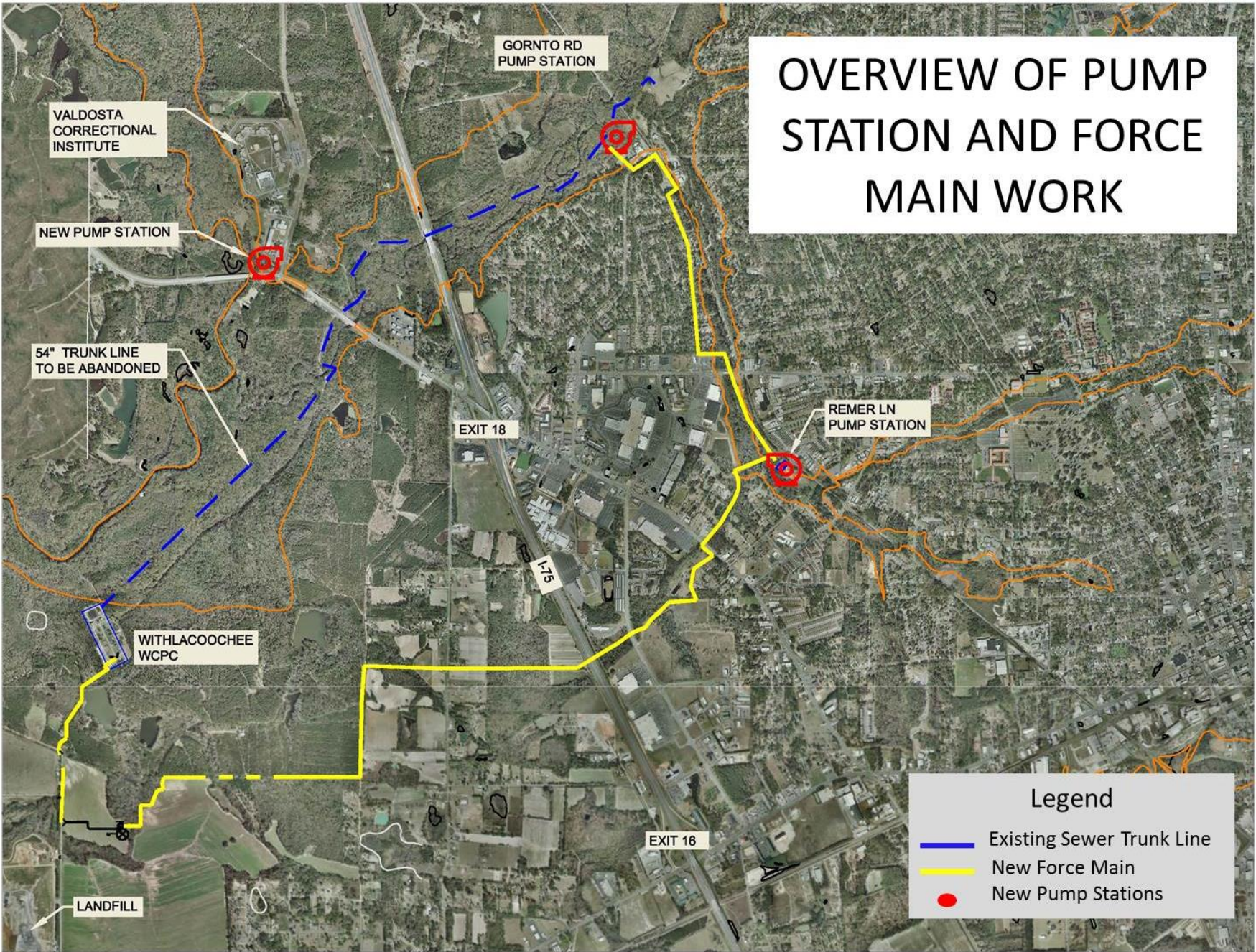
- Contract Awarded to Garney Construction on April 24, 2014
- 2 master pump stations
- 2 minor pump stations
- Over 6 miles of force main
- New headworks structure
- 6 million gallon per day (MGD) flow equalization (EQ) basin
- Project Cost: \$36 million – Georgia Environmental Finance Authority (GEFA) Loan
- Completion date: July 2016

New Plant Project:

- Request for Proposals (RFP) closed on April 24, 2014
 - A selection committee has been formed and scheduled to review proposals May 9th
- Relocation of the remainder of the old plant to the new site
- Project Cost: \$20+ million – SPLOST VII
- Completion date: August 2017

Total project cost is \$56+ million

OVERVIEW OF PUMP STATION AND FORCE MAIN WORK



VALDOSTA CORRECTIONAL INSTITUTE

GORNTO RD PUMP STATION

NEW PUMP STATION

54" TRUNK LINE TO BE ABANDONED

EXIT 18

REMER LN PUMP STATION

WITHLACOOCHEE WPCP

54

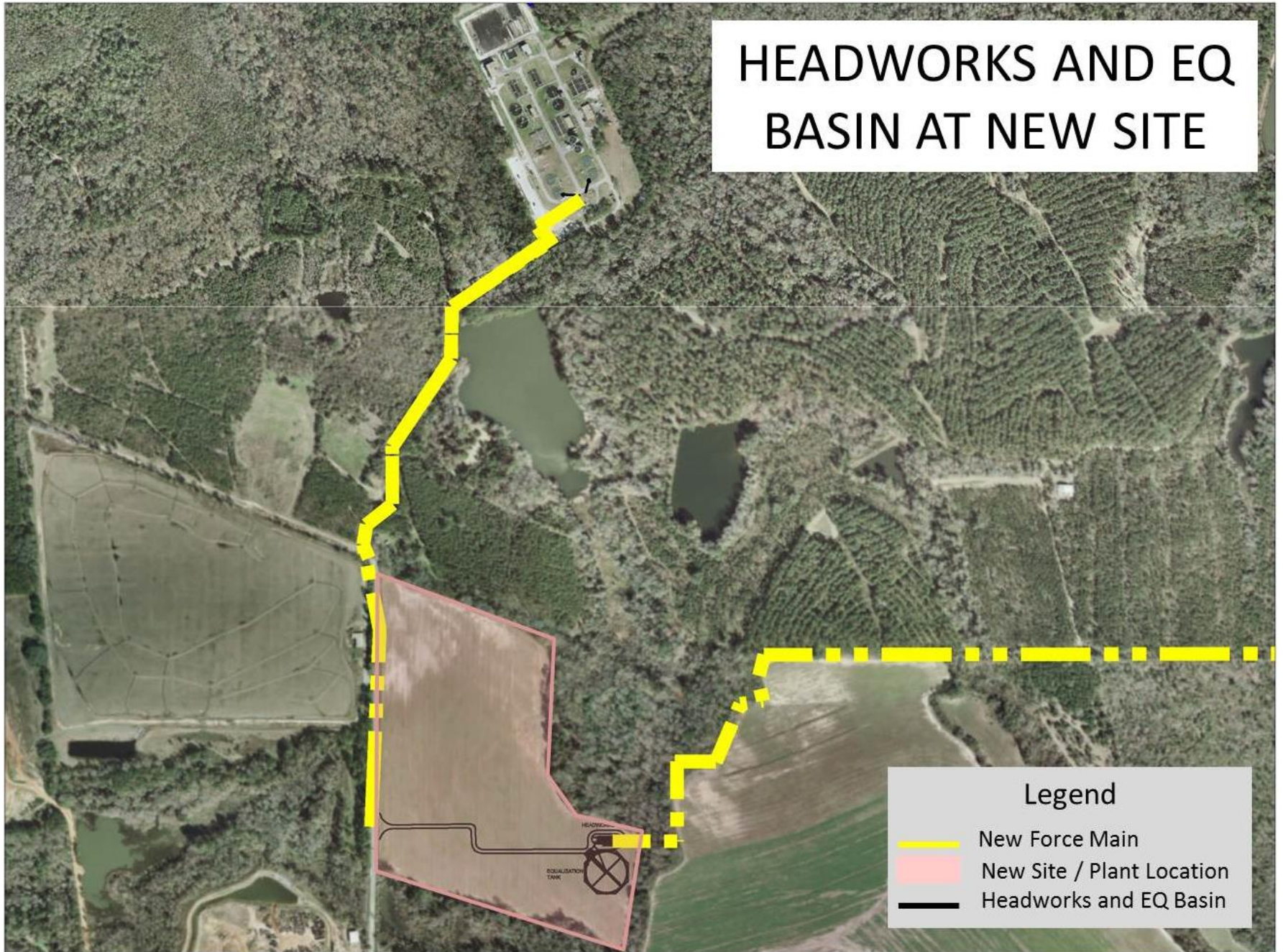
EXIT 16

LANDFILL

Legend

- Existing Sewer Trunk Line
- New Force Main
- New Pump Stations

HEADWORKS AND EQ BASIN AT NEW SITE



Valdosta Sanitary Sewer System Improvements Update

Smoke Testing Sanitary Sewer System

- Hired Constantine Engineering
- Estimated \$700,000 to test 300 miles of sewer lines
- 4 year process
- Timeframe: January 2014 – December 2018



Valdosta Sanitary Sewer System Improvements Update

Other Items

- \$2,250,000: Annual sewer manhole replacement / rehabilitation program
 - Minimum 30 manholes each year
 - Complete by December 2018
- \$5,000,000: Pump station replacement / rehabilitation program
 - Complete by December 2018
- \$250,000: Pump station emergency portable generators
 - Over 4 years (e.g. 1 per year for 4 years)
 - Complete by December 2018



Valdosta Sanitary Sewer System Improvements Update

Additional Information

- \$2,500,000 in short term projects – Emergency Repairs Completed



Installed Influent Screens



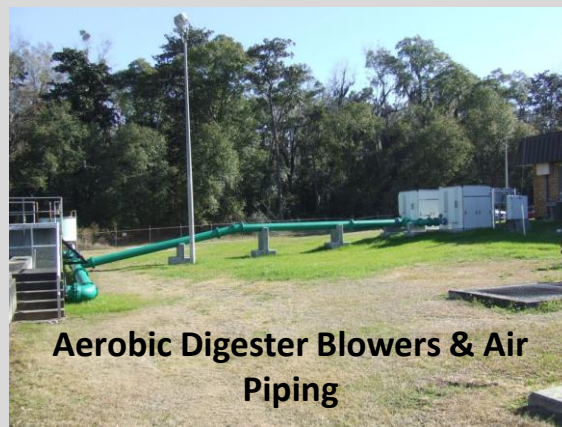
RAS "de-ragging" pipeline



Nitrification Basin Air Piping



Tertiary or "Back Wash" Filter



Aerobic Digester Blowers & Air Piping



Mobile Belt Filter Press (BFP)

Information

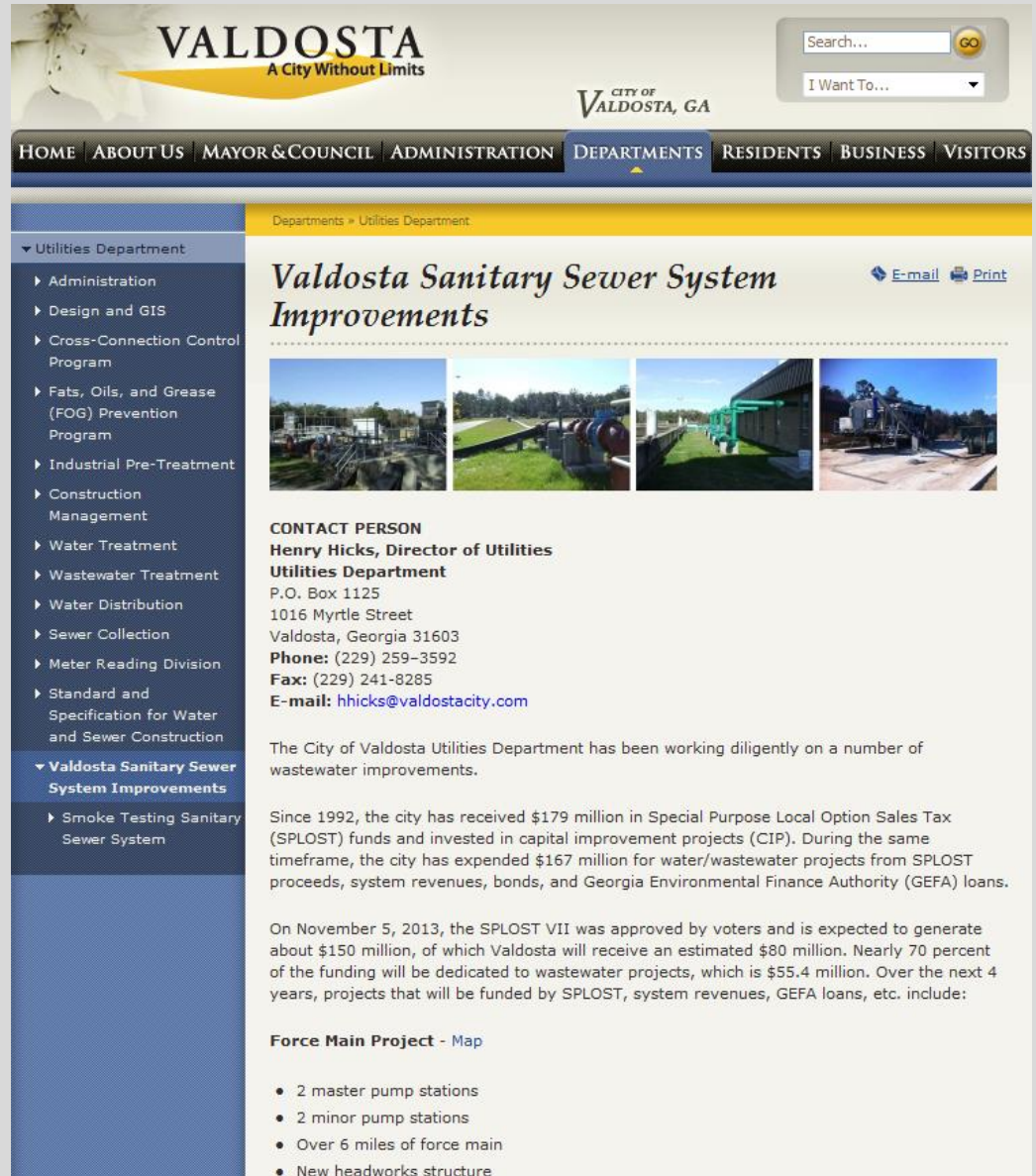
To get accurate and current information on the sewer improvements and activities visit: www.valdostacity.com/utilities and go to “Valdosta Sanitary Sewer System Improvements”

In addition to previous information highlighted, it includes:

- Smoke Testing Project website
- Press releases
- Documents
- Presentations

Also, sign up for City eNEWS:

- Press Releases
- City Council Meetings
- City Beat Newsletter



The screenshot shows the Valdosta City website. At the top, the Valdosta logo is displayed with the tagline "A City Without Limits". To the right of the logo is a search bar and a dropdown menu labeled "I Want To...". Below the logo is a navigation bar with links for HOME, ABOUT US, MAYOR & COUNCIL, ADMINISTRATION, DEPARTMENTS, RESIDENTS, BUSINESS, and VISITORS. The main content area is titled "Valdosta Sanitary Sewer System Improvements" and includes a "CONTACT PERSON" section for Henry Hicks, Director of Utilities. The page also features a "Force Main Project - Map" section with a list of project details.

VALDOSTA
A City Without Limits

CITY OF VALDOSTA, GA

HOME ABOUT US MAYOR & COUNCIL ADMINISTRATION DEPARTMENTS RESIDENTS BUSINESS VISITORS


Departments » Utilities Department

▼ Utilities Department

- ▶ Administration
- ▶ Design and GIS
- ▶ Cross-Connection Control Program
- ▶ Fats, Oils, and Grease (FOG) Prevention Program
- ▶ Industrial Pre-Treatment
- ▶ Construction Management
- ▶ Water Treatment
- ▶ Wastewater Treatment
- ▶ Water Distribution
- ▶ Sewer Collection
- ▶ Meter Reading Division
- ▶ Standard and Specification for Water and Sewer Construction
- ▼ **Valdosta Sanitary Sewer System Improvements**
- ▶ Smoke Testing Sanitary Sewer System

Valdosta Sanitary Sewer System Improvements

E-mail Print



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The City of Valdosta Utilities Department has been working diligently on a number of wastewater improvements.

Since 1992, the city has received \$179 million in Special Purpose Local Option Sales Tax (SPLOST) funds and invested in capital improvement projects (CIP). During the same timeframe, the city has expended \$167 million for water/wastewater projects from SPLOST proceeds, system revenues, bonds, and Georgia Environmental Finance Authority (GEFA) loans.

On November 5, 2013, the SPLOST VII was approved by voters and is expected to generate about \$150 million, of which Valdosta will receive an estimated \$80 million. Nearly 70 percent of the funding will be dedicated to wastewater projects, which is \$55.4 million. Over the next 4 years, projects that will be funded by SPLOST, system revenues, GEFA loans, etc. include:

Force Main Project - Map

- 2 master pump stations
- 2 minor pump stations
- Over 6 miles of force main
- New headworks structure

Any Questions

EMILY DAVENPORT, STORMWATER MANAGER

CITY OF VALDOSTA

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