

WEST BANK MASTER DRAINAGE PLAN

Luling/Luling I-310 & Mimosa-Willowdale
Watersheds

June 20, 2024



Introduction



Will Bane, P.E. – Lead Professional



Master Drainage Plan



Master Drainage Plan for West Bank of St. Charles Parish

- Long Term Planning of Drainage Projects
 - Big Picture View of Drainage
- Projects Recommended With Estimated Costs



How We Looked at the System



PROCESS

- Gather Available Data for Analysis (Topography, Pipes, Ditches, Pumps)
- Create Computer Model of Drainage System
- Verify Results with Parish Engineers
- Identify Drainage Needs and Projects
- Create New Computer Model with Proposed Projects
- Communicate Findings to Parish and Residents



Model Goals and Setup



2D HEC-RAS Models

Lidar used for ground surfaces, USGS Soil Map used for soils, NLCD land cover used for surface roughness, and survey data where available for existing drainage culverts and canals

- The model is a 2D, rain on grid model which runs for a 24-hour duration
- The 10-yr, 25-yr, 50-yr, and 100-yr storm events were run
- The Goals are to reduce flood damages, depths, and duration with proposed improvements. Proposed improvements were sized for a 25-yr duration storm event



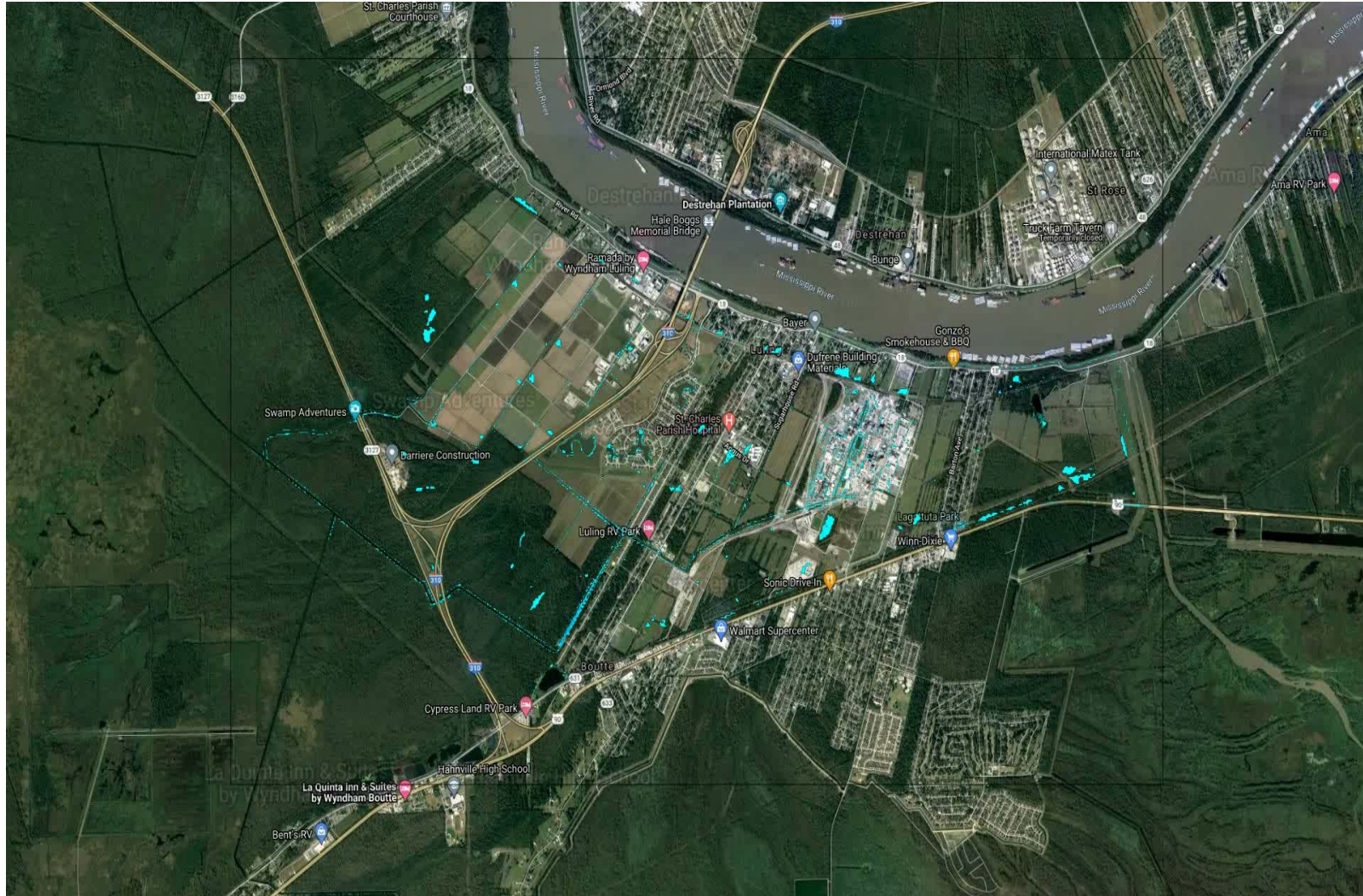
Watershed Improvements



Luling and Luling I-310 Watersheds



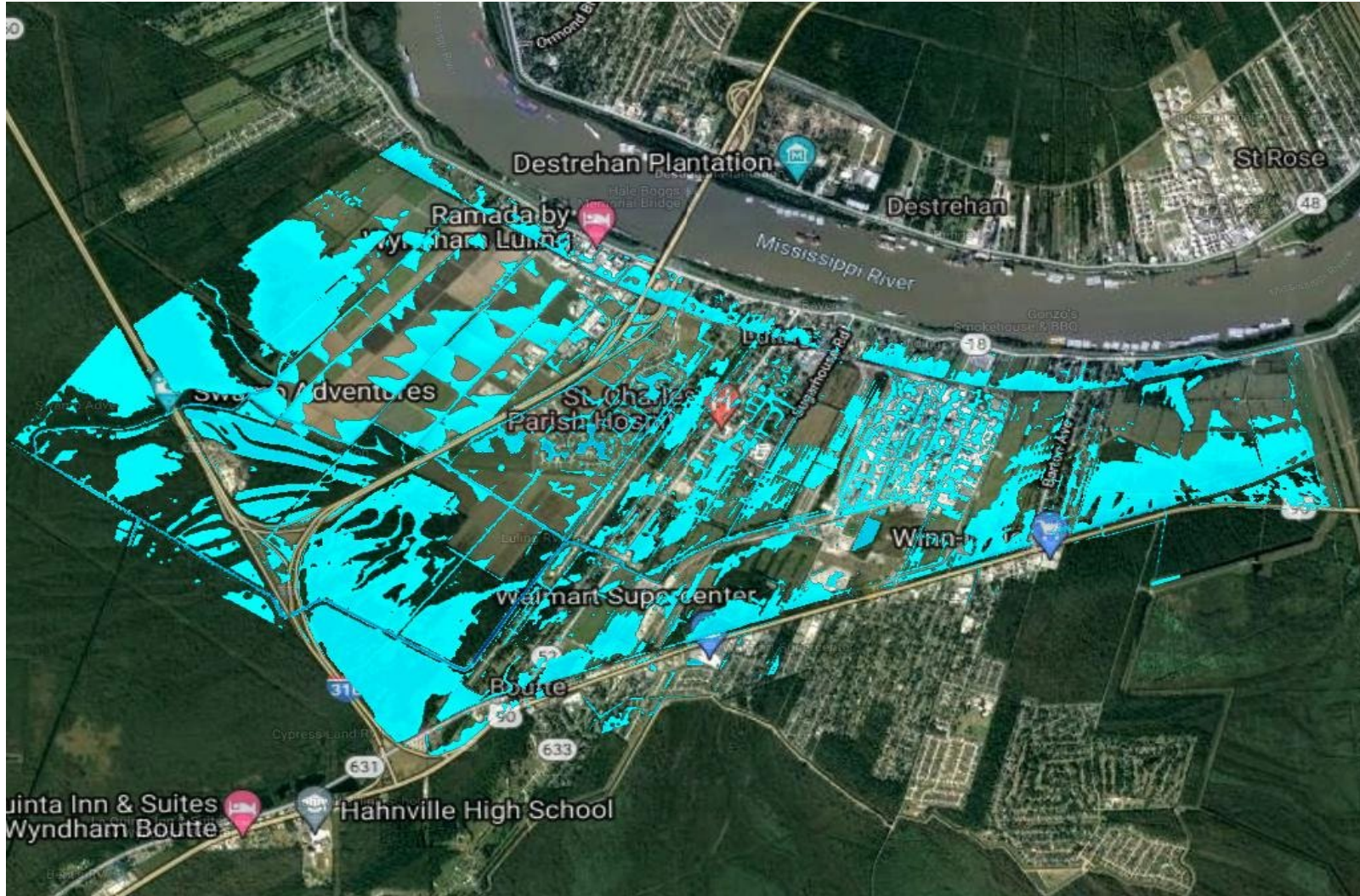
Model Simulations



100-Year



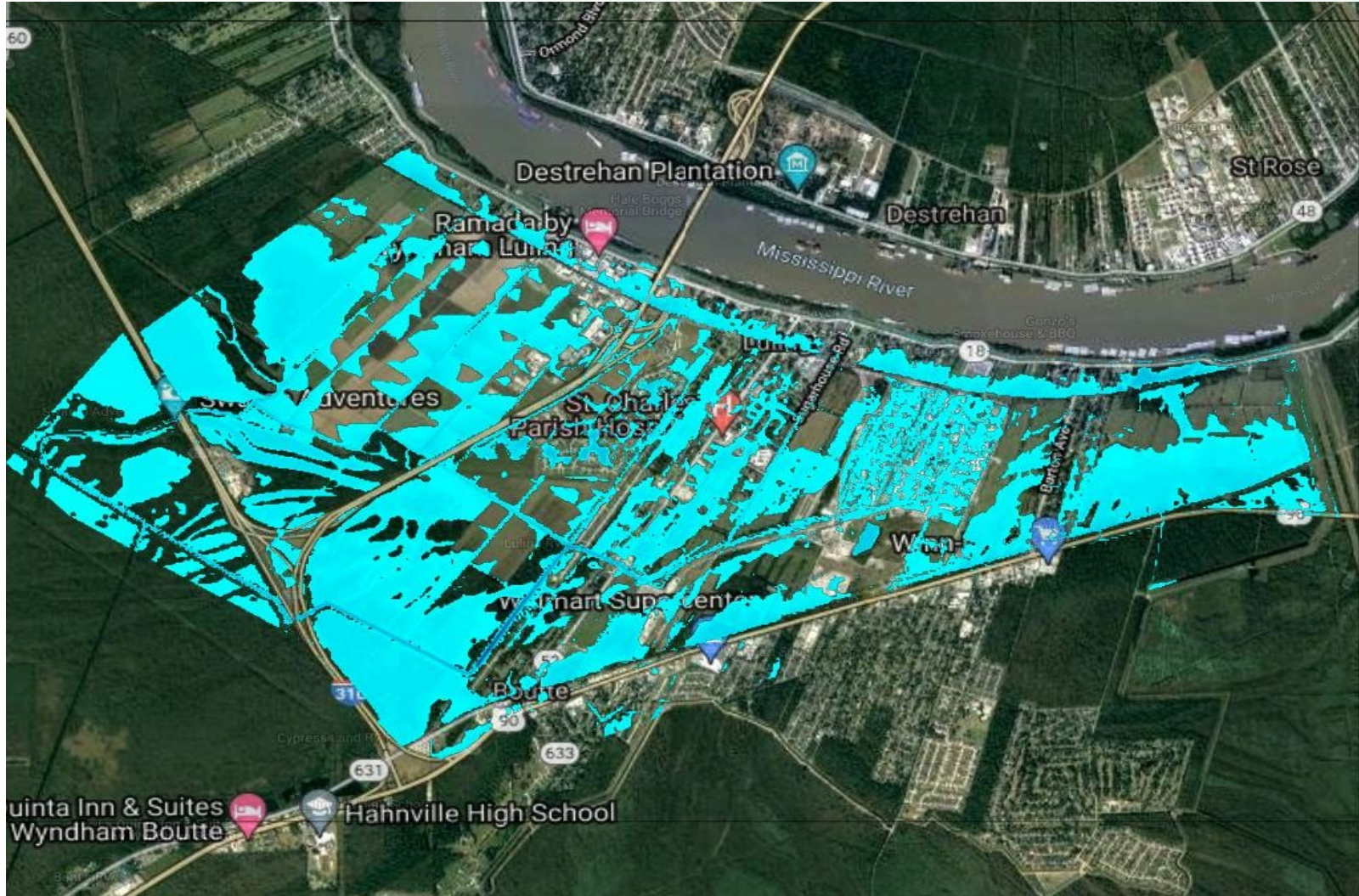
Model Simulations



10-Year



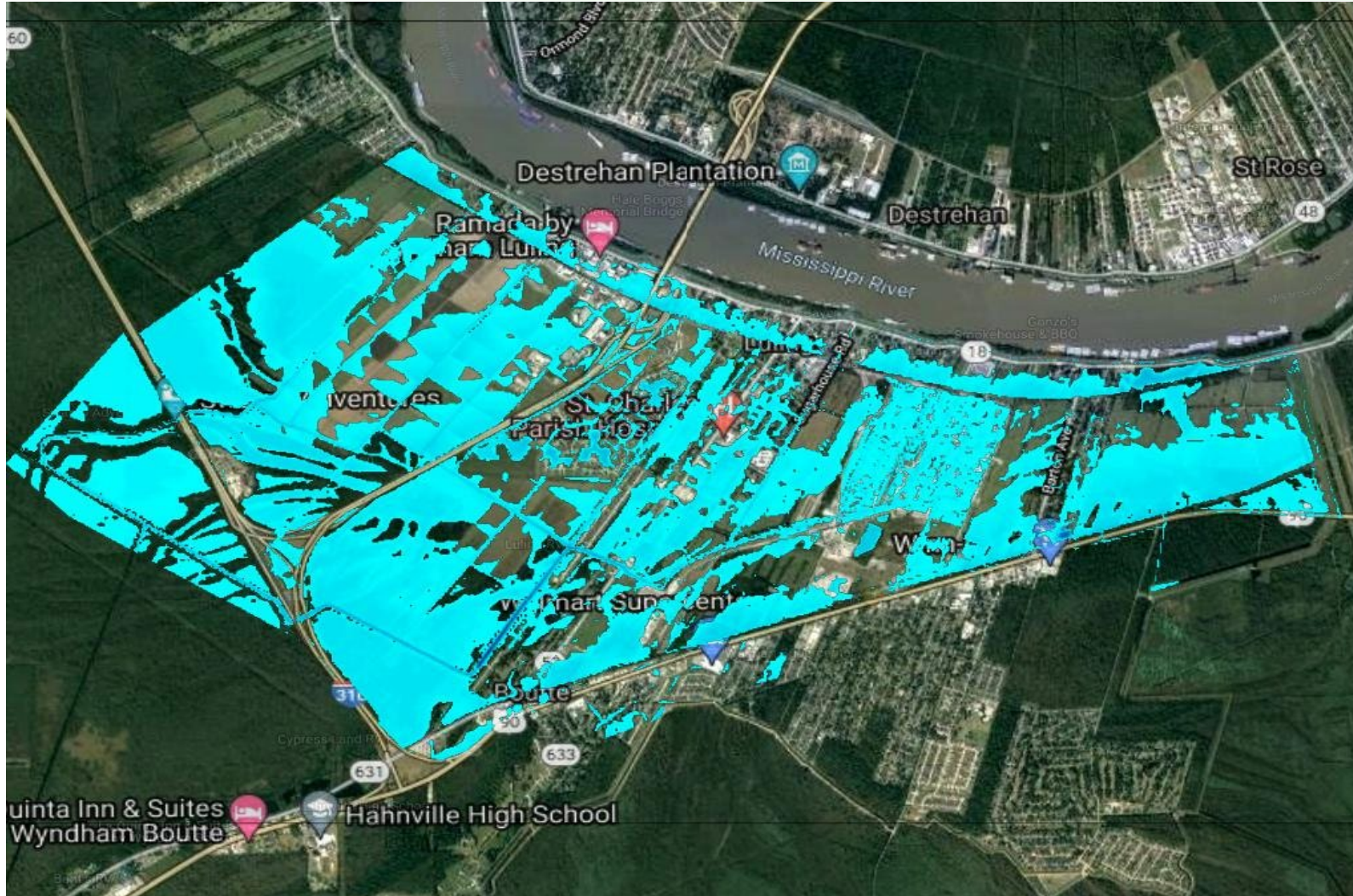
Model Simulations



25-Year



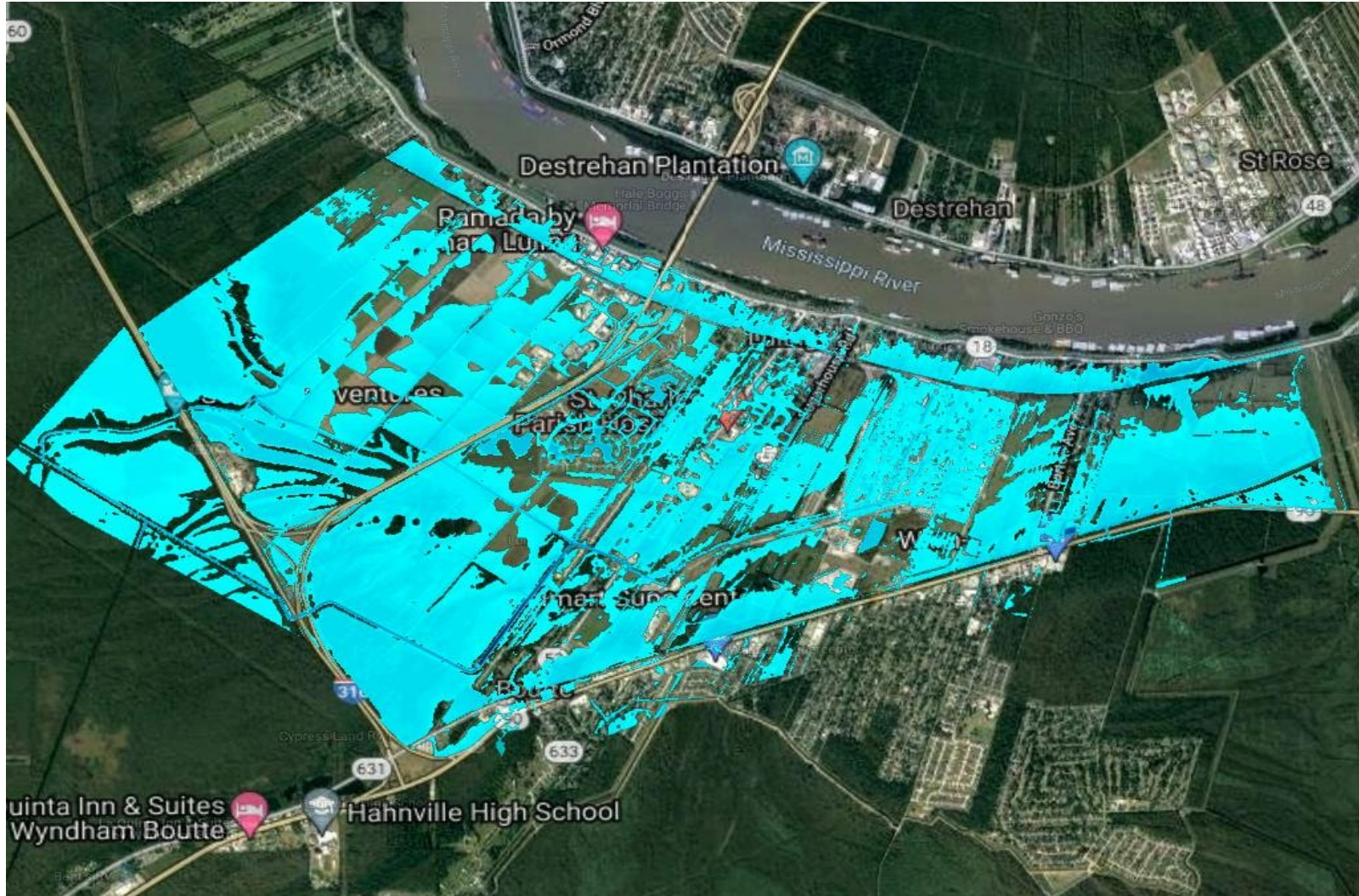
Model Simulations



50-Year



Model Simulations



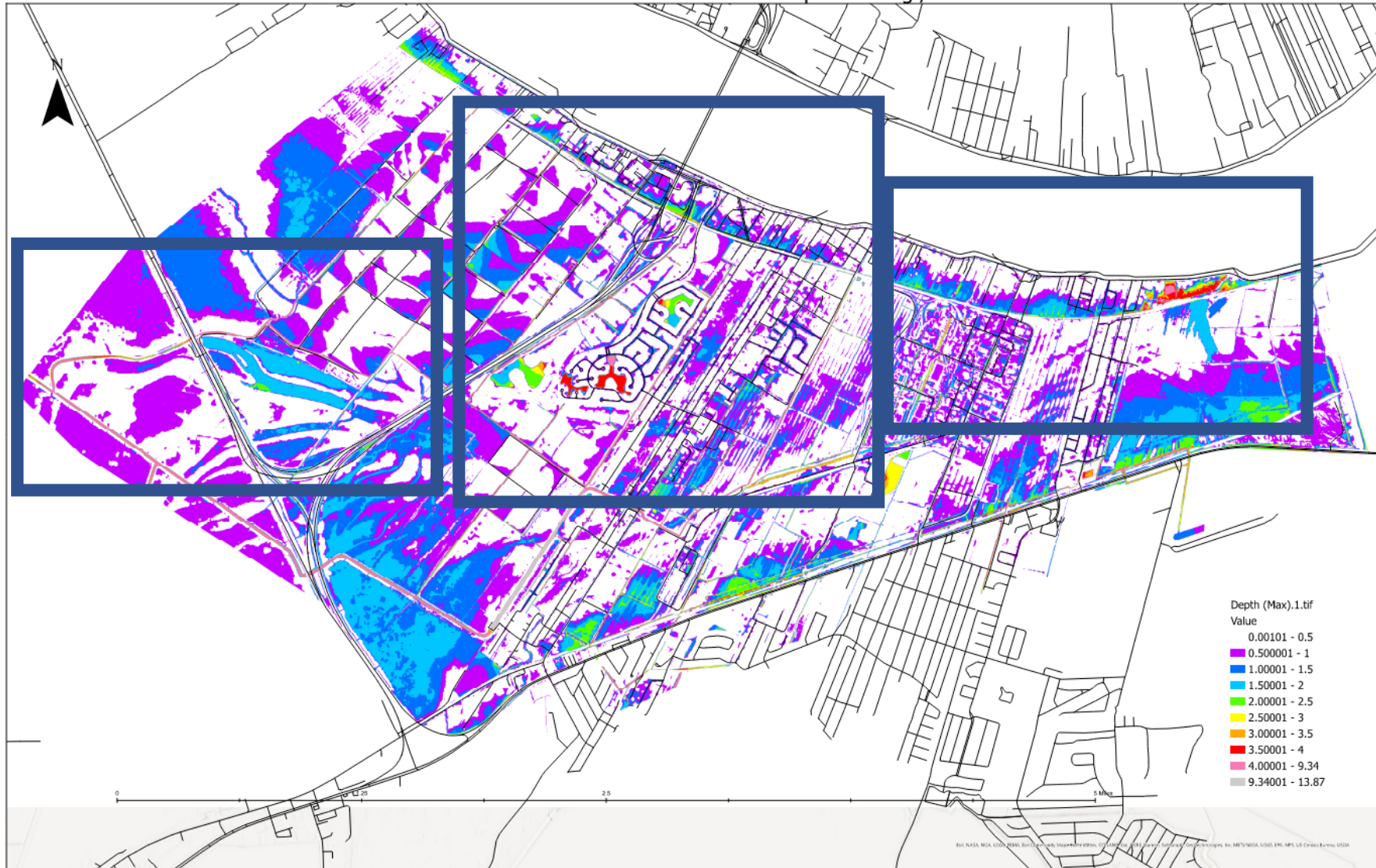
100-Year



Model Results – Luling and Luling I-310



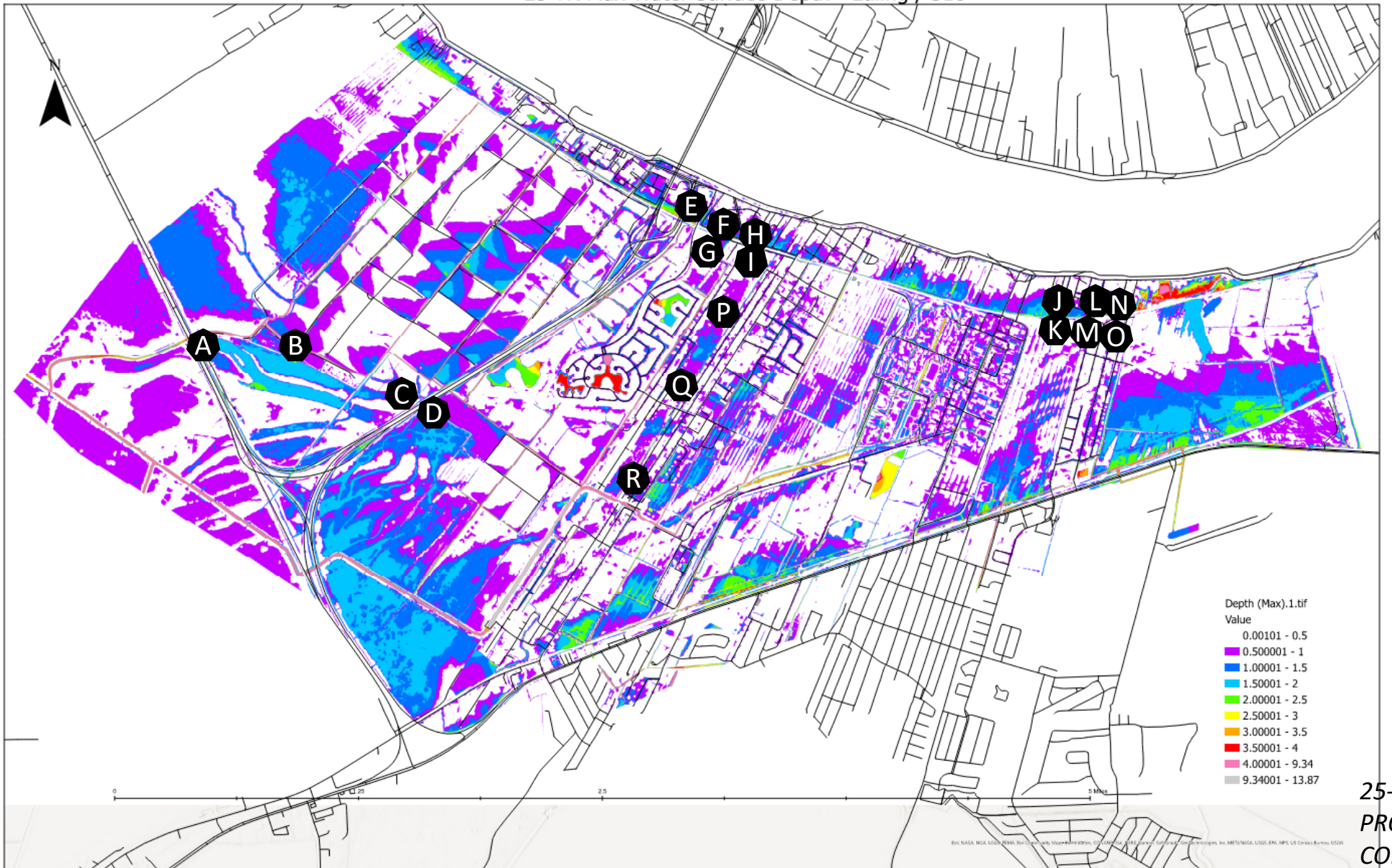
25-YR Max Water Surface Depth - Luling / 310



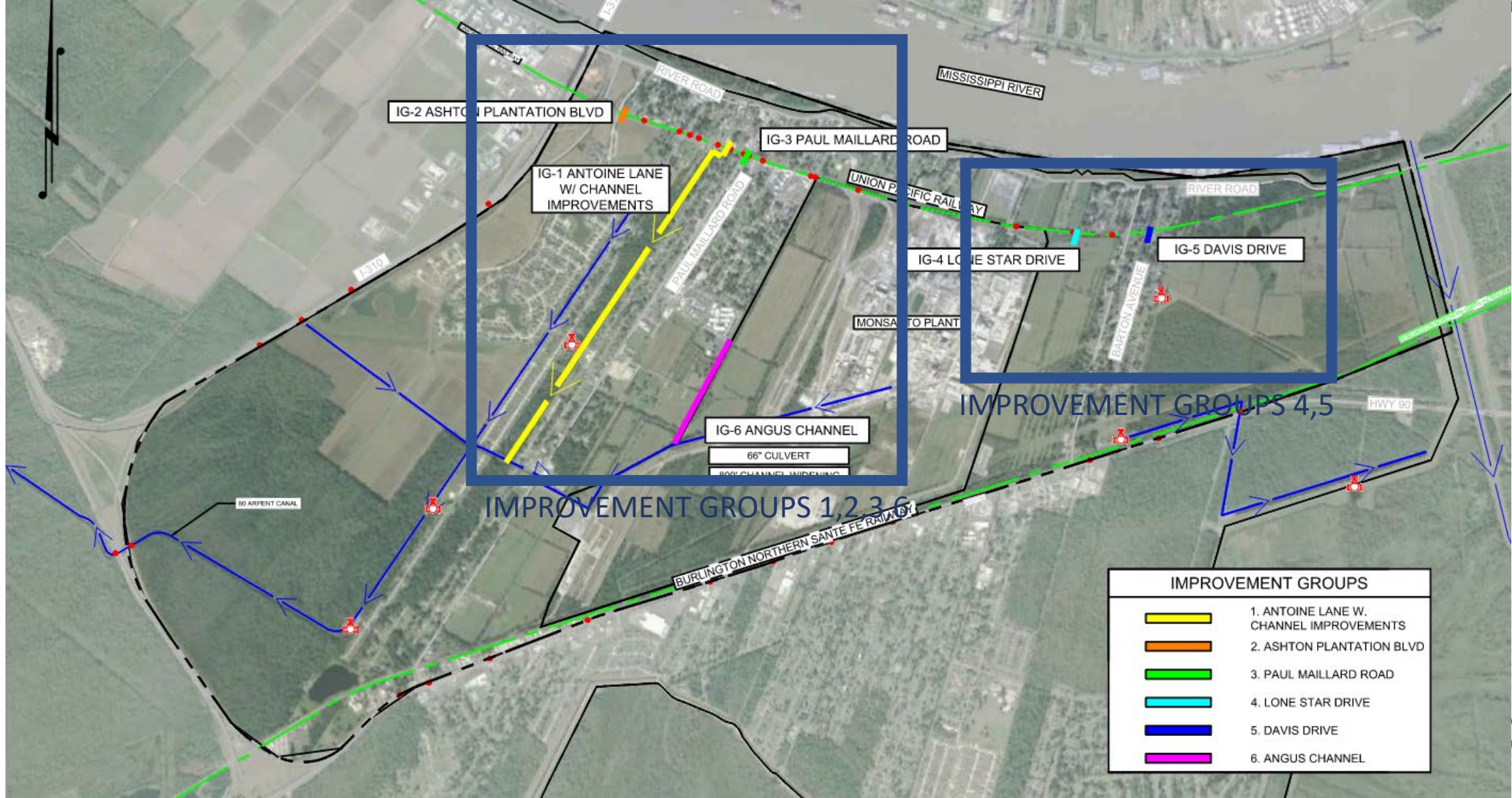
25-YR WSD
PROPOSED
CONDITION



25-YR Max Water Surface Depth - Luling / 310



Luling Improvement Groups



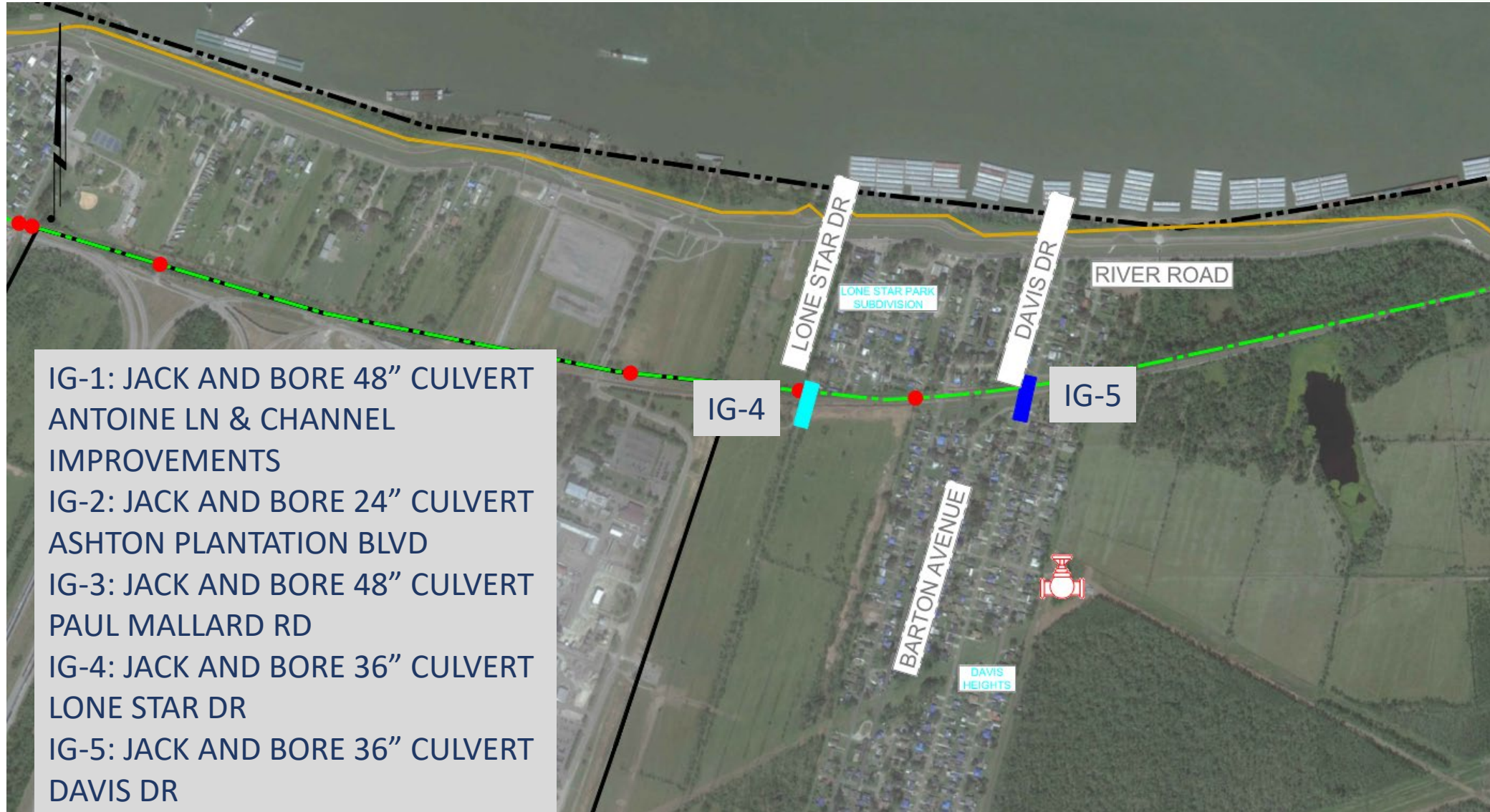
Luling IG-1,2,3



IG-1: JACK AND BORE 48" CULVERT
ANTOINE LN & CHANNEL
IMPROVEMENTS
IG-2: JACK AND BORE 24" CULVERT
ASHTON PLANTATION BLVD
IG-3: JACK AND BORE 48" CULVERT
PAUL MALLARD RD



Luling IG-4,5



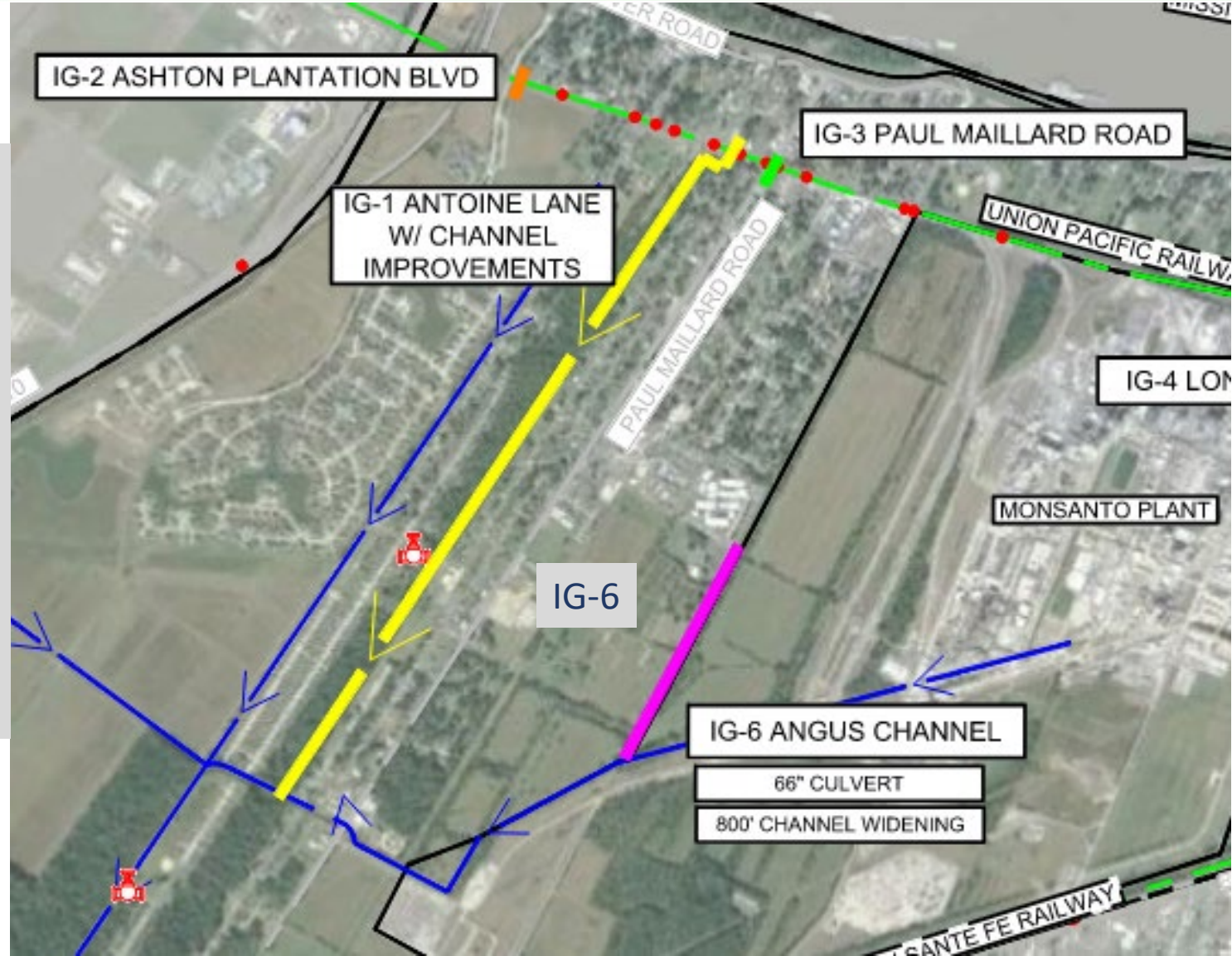
- IG-1: JACK AND BORE 48" CULVERT ANTOINE LN & CHANNEL IMPROVEMENTS
- IG-2: JACK AND BORE 24" CULVERT ASHTON PLANTATION BLVD
- IG-3: JACK AND BORE 48" CULVERT PAUL MALLARD RD
- IG-4: JACK AND BORE 36" CULVERT LONE STAR DR
- IG-5: JACK AND BORE 36" CULVERT DAVIS DR



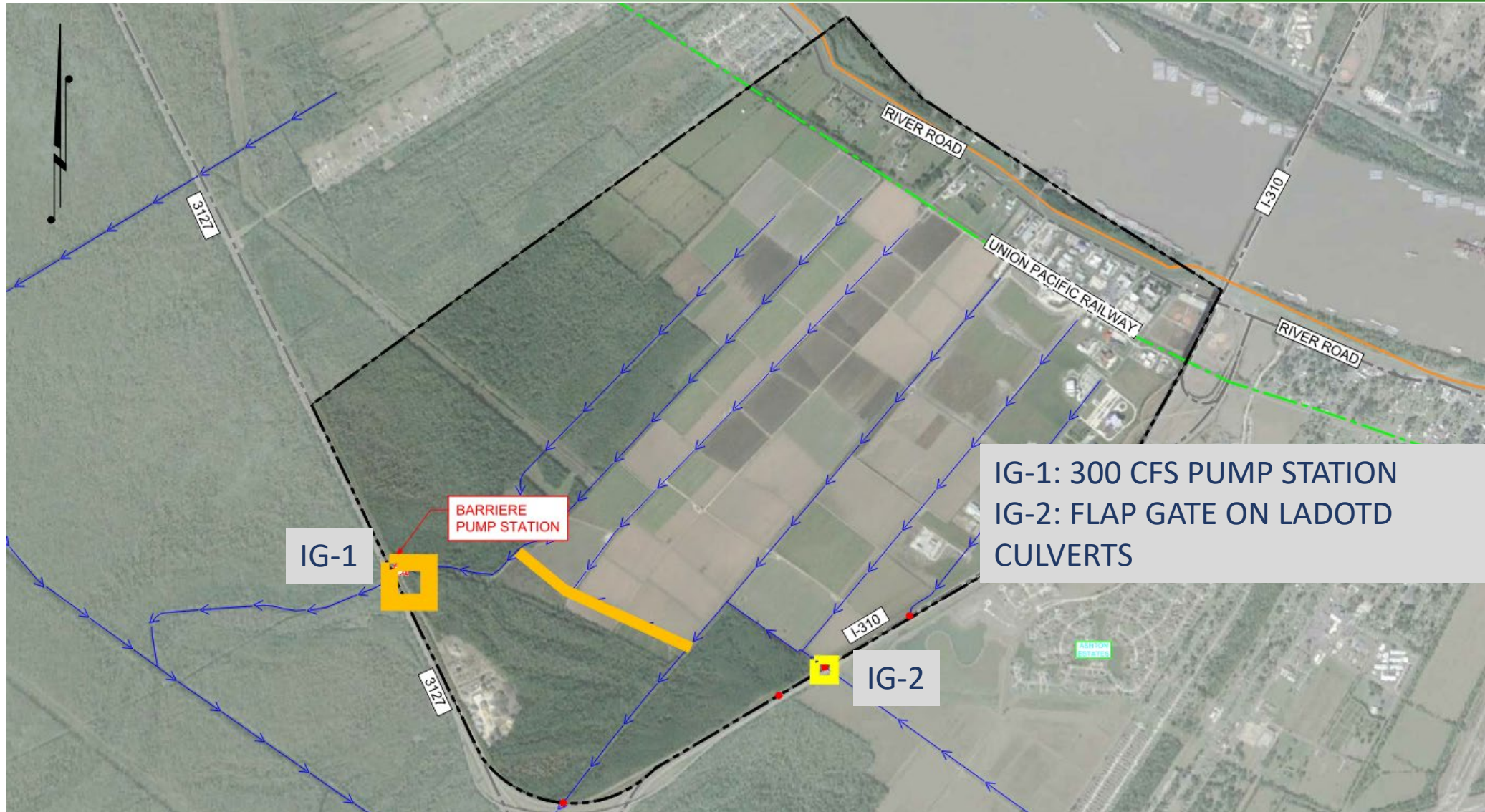
Luling IG-6



- IG-1: JACK AND BORE 48" CULVERT ANTOINE LN & CHANNEL IMPROVEMENTS
- IG-2: JACK AND BORE 24" CULVERT ASHTON PLANTATION BLVD
- IG-3: JACK AND BORE 48" CULVERT PAUL MALLARD RD
- IG-4: JACK AND BORE 36" CULVERT LONE STAR DR
- IG-5: JACK AND BORE 36" CULVERT DAVIS DR
- IG-6: ANGUS CHANNEL



Luling I-310 Improvement Groups



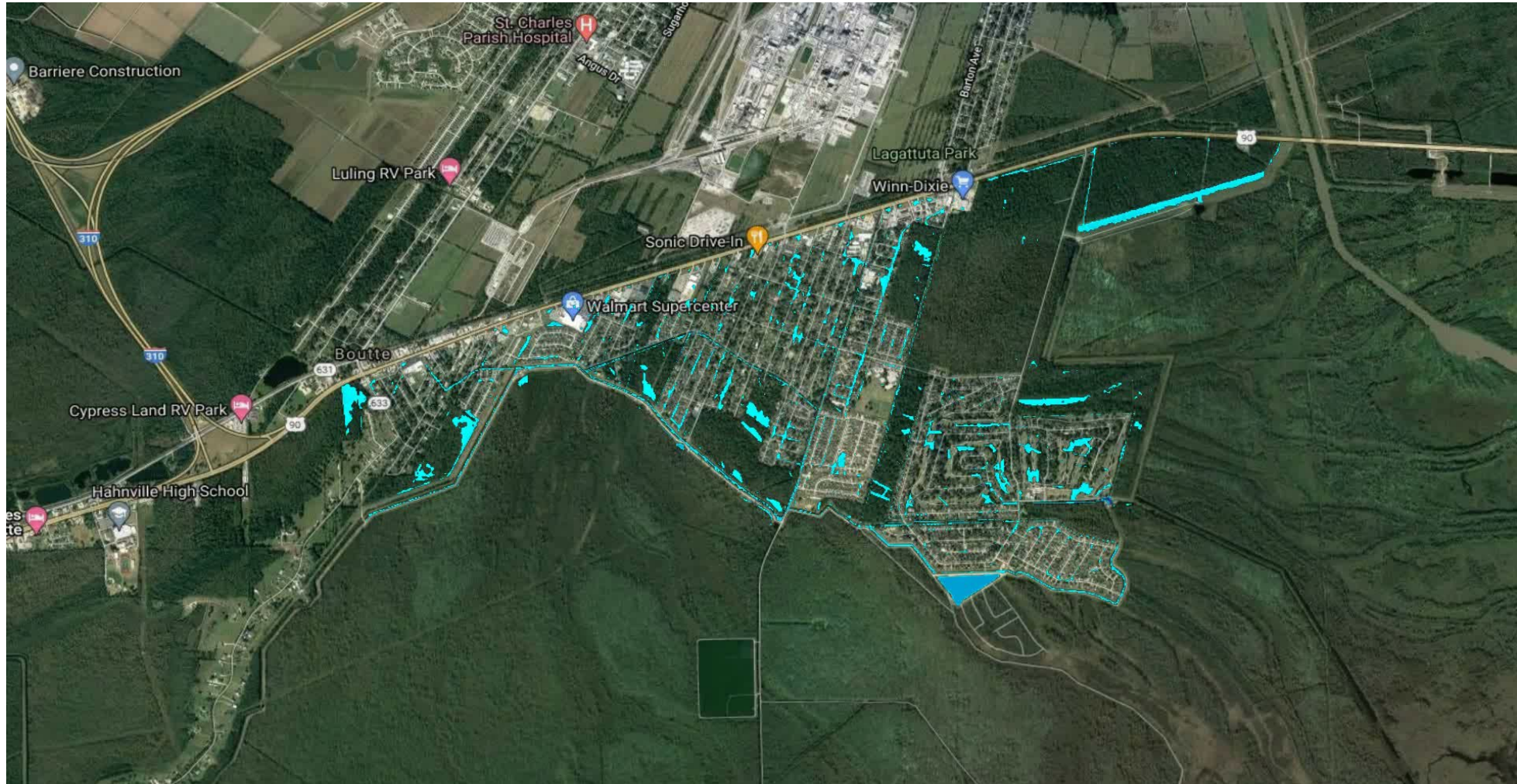
Watershed Improvements



Mimosa-Willowdale Watersheds



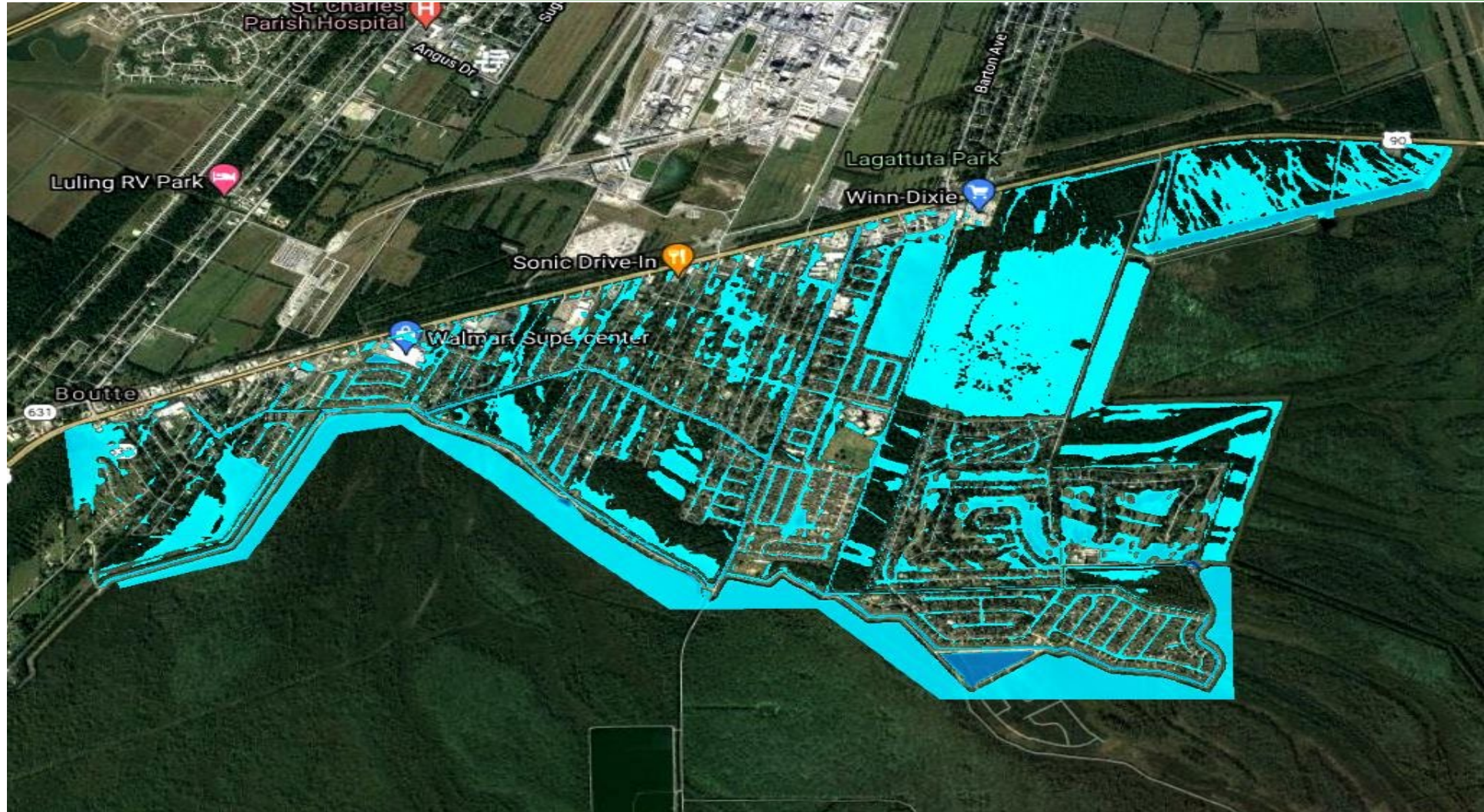
Model Simulations



100-Year, 24-Hour Simulation



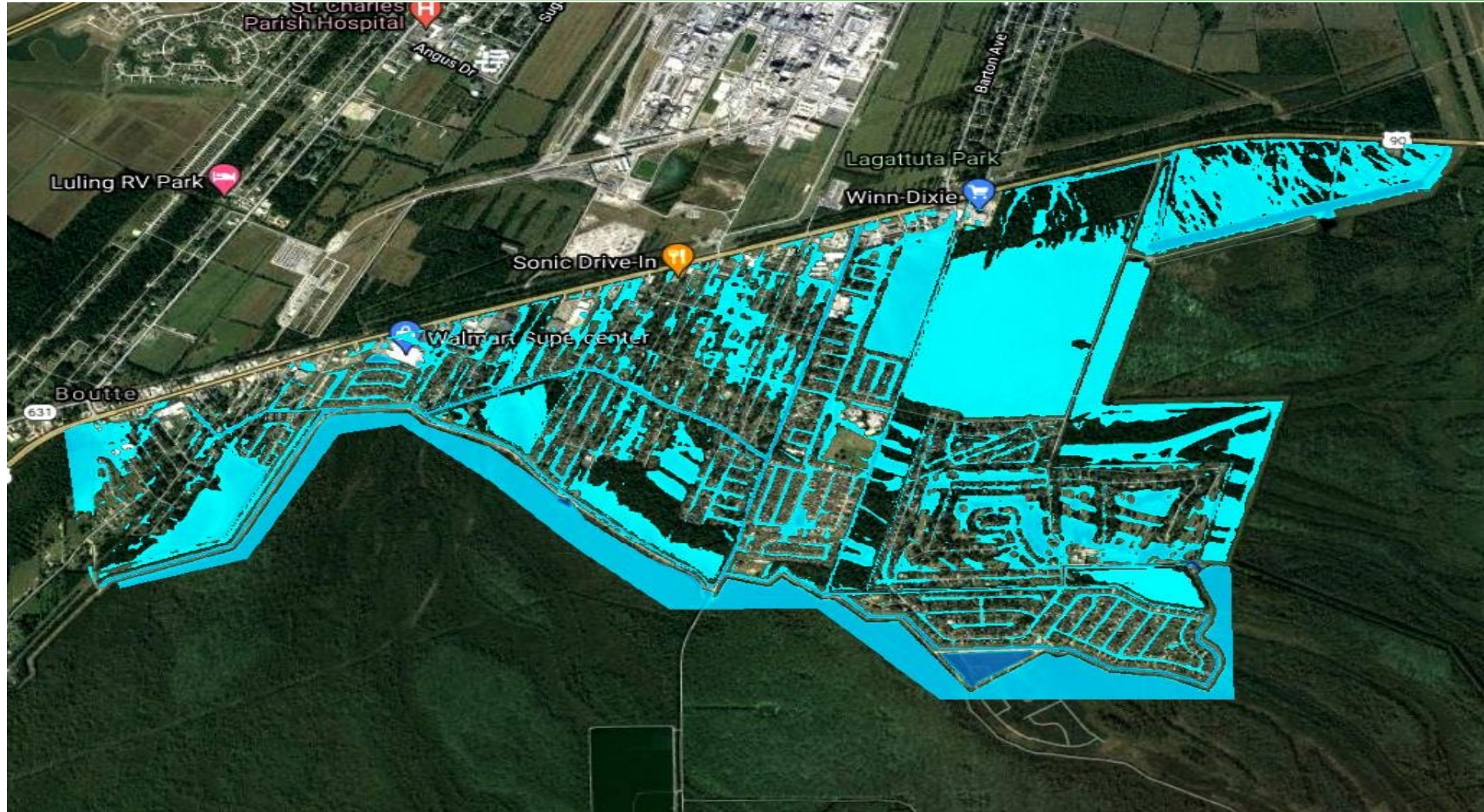
Model Simulations



10-Year



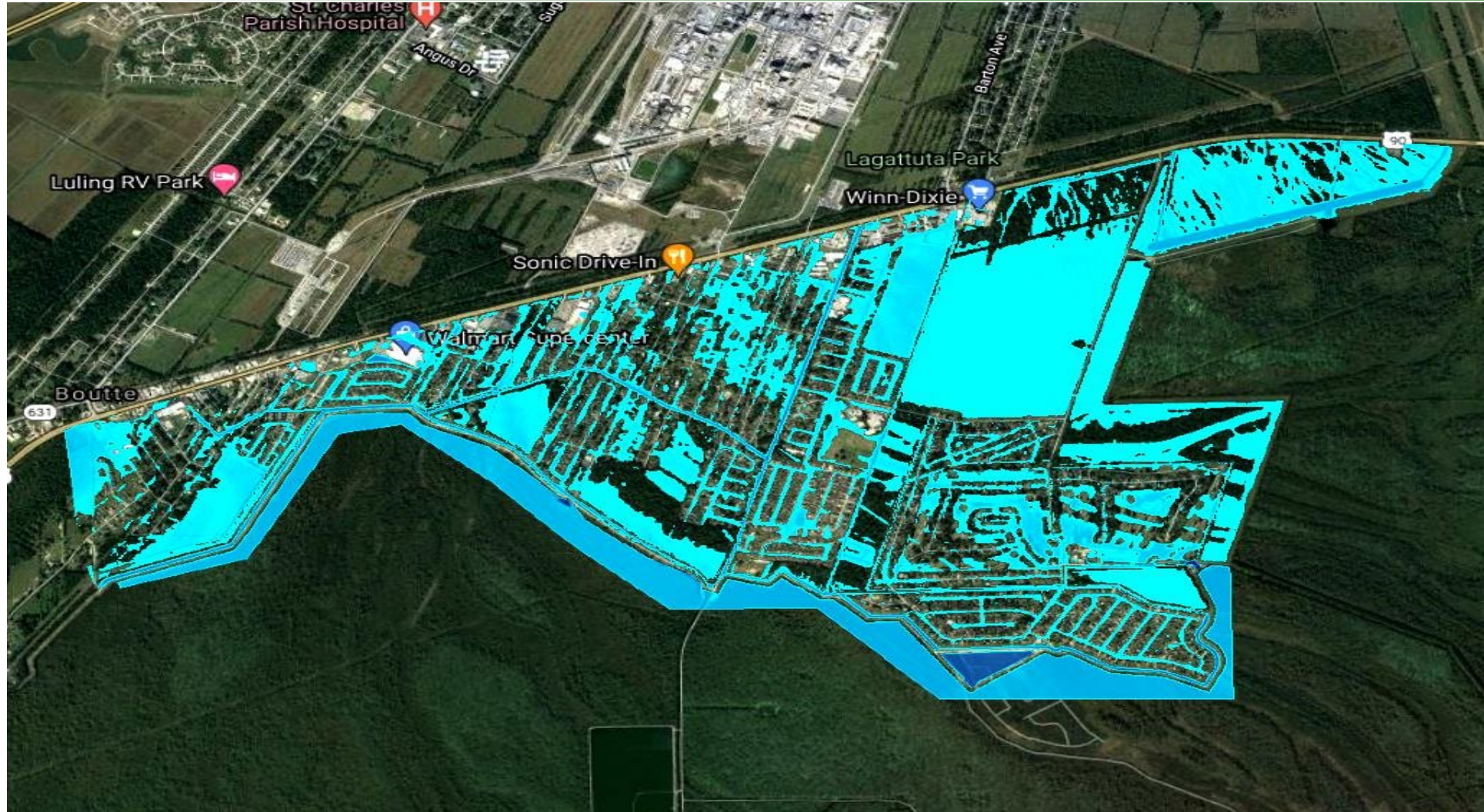
Model Simulations



25-Year



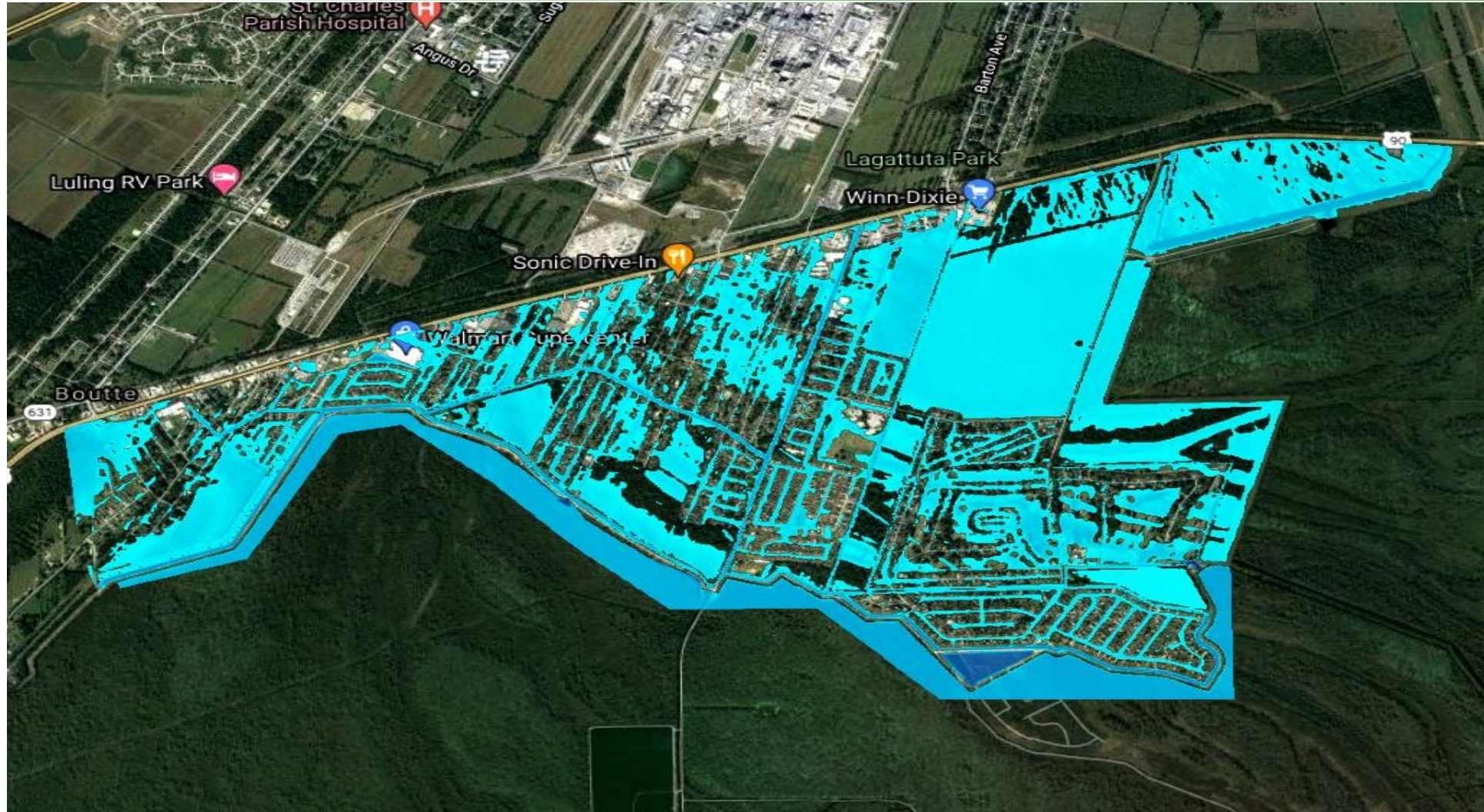
Model Simulations



50-Year



Model Simulations



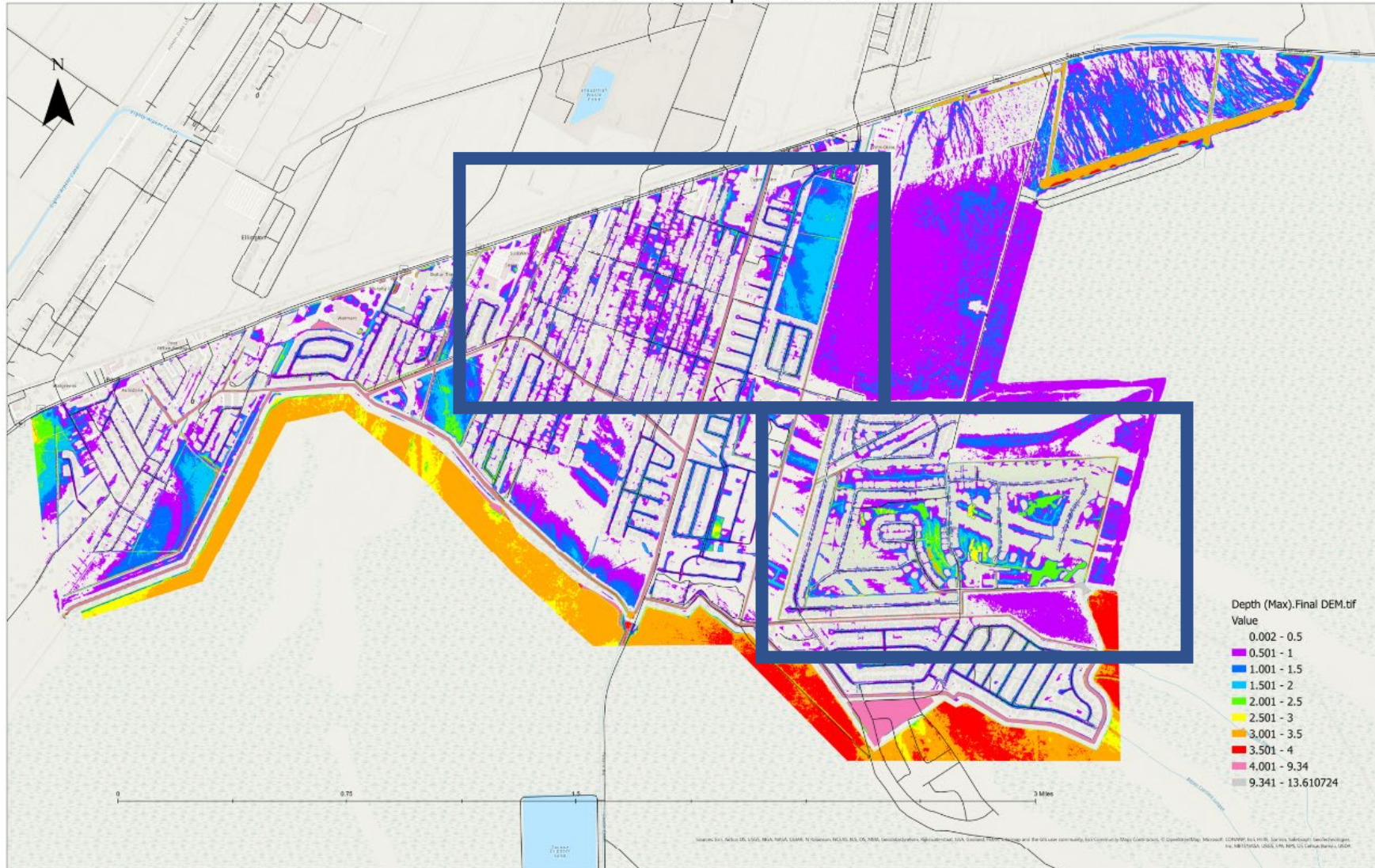
100-Year



Model Results – Mimosa-Willowdale



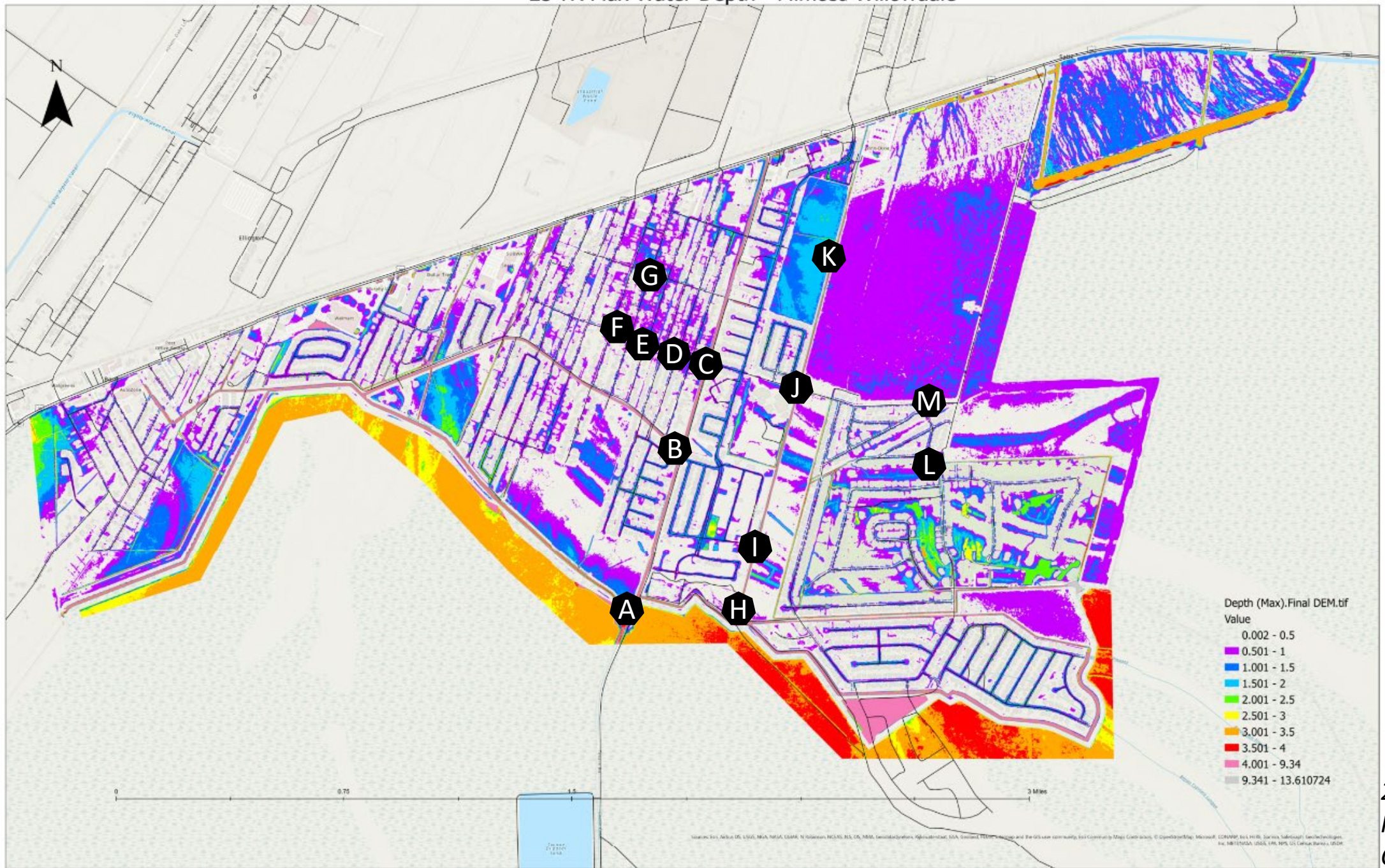
25-YR Max Water Depth - Mimosa Willowdale



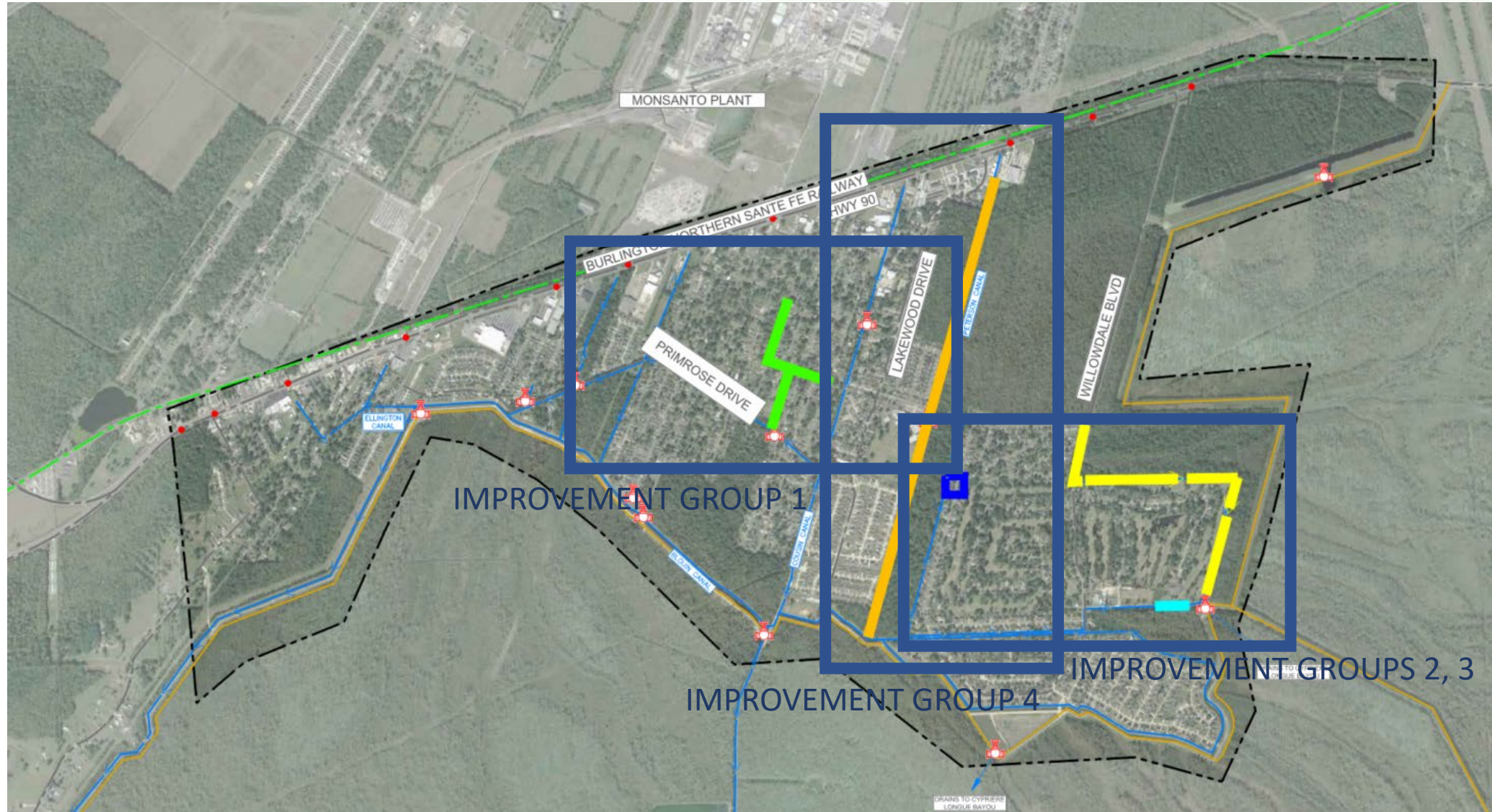
25-YR WSD
PROPOSED
CONDITION



25-YR Max Water Depth - Mimosa Willowdale



Mimosa-Willowdale Improvement Groups



Mimosa-Willowdale IG-1



IG-1: BOX CULVERTS ON WANDA ST, HEATHER DR, AND MIMOSA AVE



Mimosa-Willowdale IG-2,3



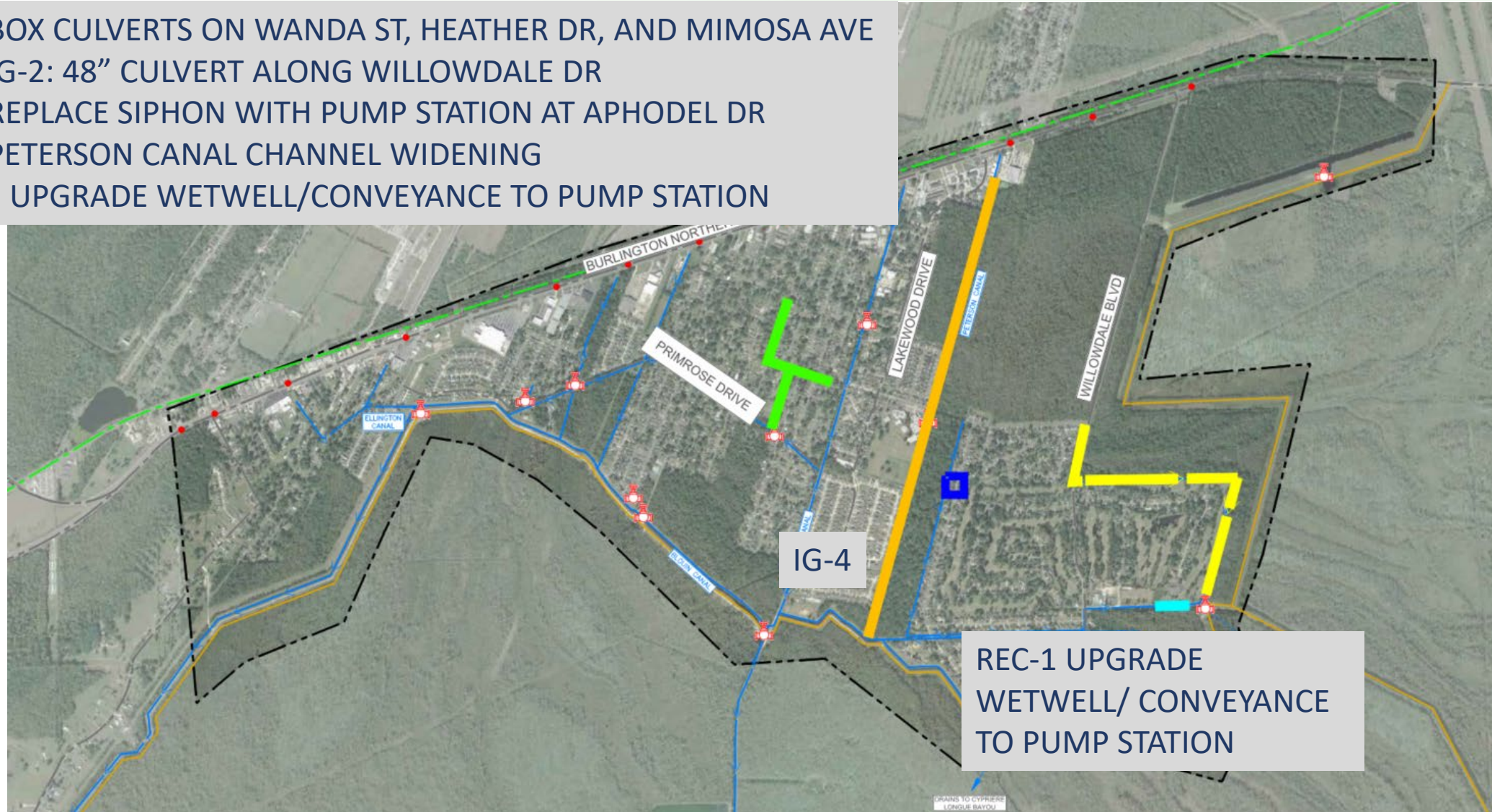
IG-1: BOX CULVERTS ON WANDA ST, HEATHER DR, AND MIMOSA AVE
IG-2: 48" CULVERT ALONG WILLOWDALE BLVD
IG-3: REPLACE SIPHON WITH PUMP STATION AT APHODEL DR



Mimosa-Willowdale IG-4



- IG-1: BOX CULVERTS ON WANDA ST, HEATHER DR, AND MIMOSA AVE
- IG-2: 48" CULVERT ALONG WILLOWDALE DR
- IG-3: REPLACE SIPHON WITH PUMP STATION AT APHODEL DR
- IG-4: PETERSON CANAL CHANNEL WIDENING
- REC-1: UPGRADE WETWELL/CONVEYANCE TO PUMP STATION



COST ESTIMATES



➤ LULING PROJECT COST ESTIMATES

IMPROVEMENT GROUP	DESCRIPTION	EST. COST
IG-1	JACK AND BORE W/CHANNEL ANTOINE LN	\$875,000
IG-2	JACK AND BORE ASHTON PLANTATION BLVD	\$585,000
IG-3	JACK AND BORE PAUL MALLARD RD	\$1,040,000
IG-4	JACK AND BORE LONE STAR DR	\$565,000
IG-5	JACK AND BORE DAVIS DR	\$487,000
IG-6	ANGUS CHANNEL	\$260,000

➤ LULING I-310 PROJECT COST ESTIMATES

IMPROVEMENT GROUP	DESCRIPTION	EST. COST
IG-1	PUMP STATION	\$11,000,000
IG-2	I-310 FLAPGATES	\$160,000



COST ESTIMATES



➤ MIMOSA-WILLOWDALE PROJECT COST ESTIMATES

IMPROVEMENT GROUP	DESCRIPTION	EST. COST
REC-1	UPGRADE WETWELL/CONVEYANCE TO PUMP STATION	
IG-1	BOX CULVERTS NEAR MIMOSA AVE	\$5,475,000
IG-2	WILLOWDALE DR CULVERTS	\$986,000
IG-3	APHODEL DR PUMP STATION	\$2,490,000
IG-4	PETERSON CANAL CHANNEL WIDENING	\$796,000

