



City of New Orleans H&H Study Initial Findings

Mid-City, City Park, and Navarre

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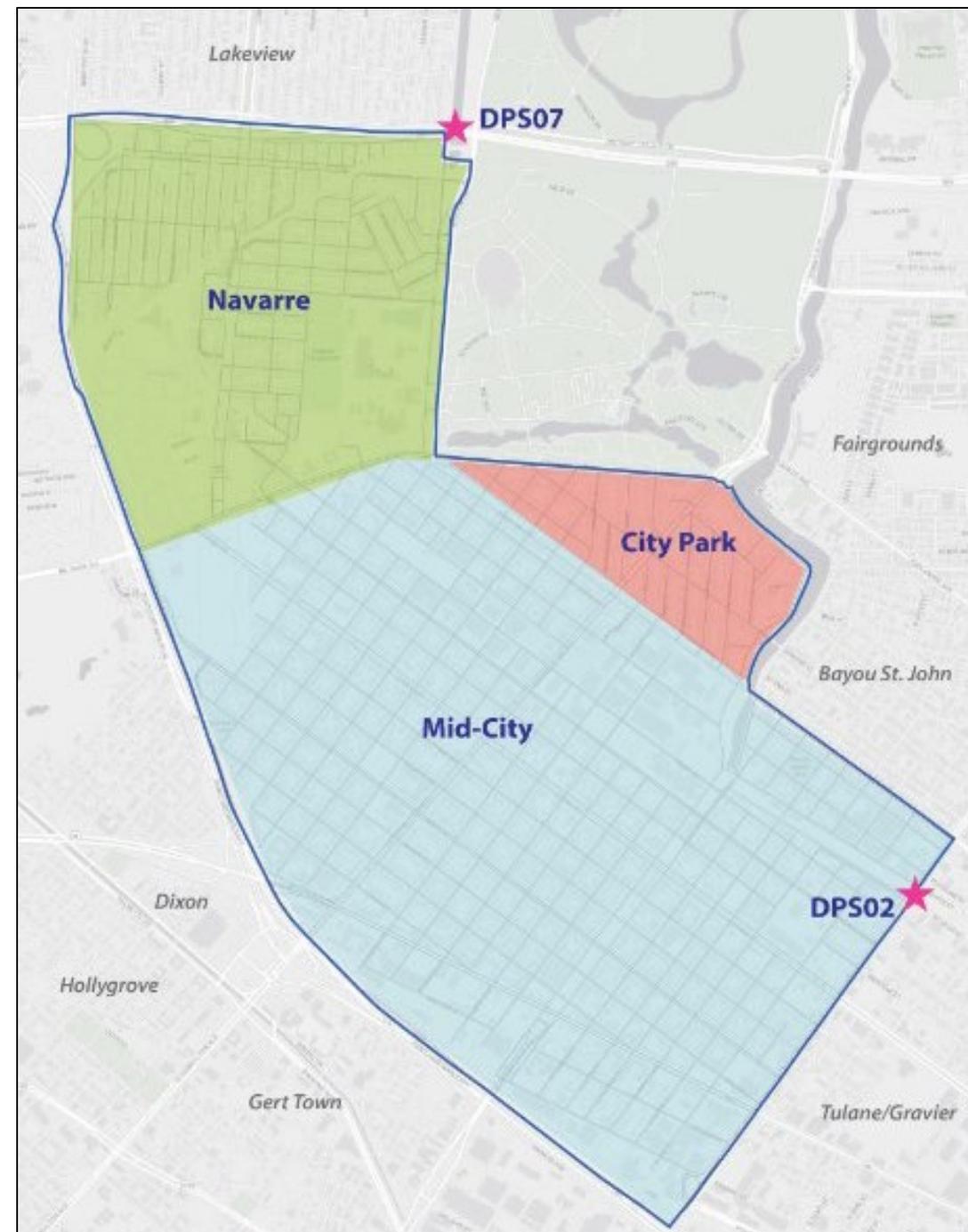


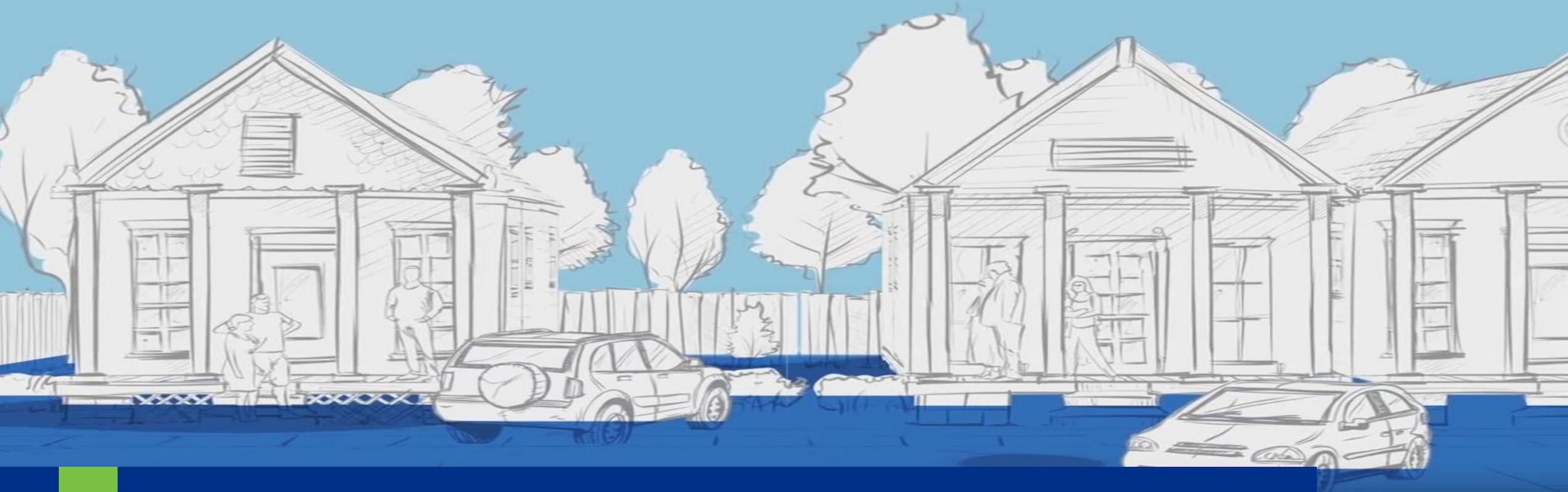
Agenda

1. System Understanding
2. Approach
3. Neighborhood Projects
4. Solutions Not Modeled

Project Overview

- Neighborhoods within the project boundary include Mid City, City Park, and Navarre
- Project goals are:
 - Update and refine the City's H&H model for areas within the project boundary
 - Simulate the existing conditions for the 1-, 10-, and 25-year
 - Evaluate the neighborhoods drainage and size proposed green infrastructure and drainage improvements.
 - Define up to 15 conceptual projects within the project boundary specifically designed to reduce flooding.

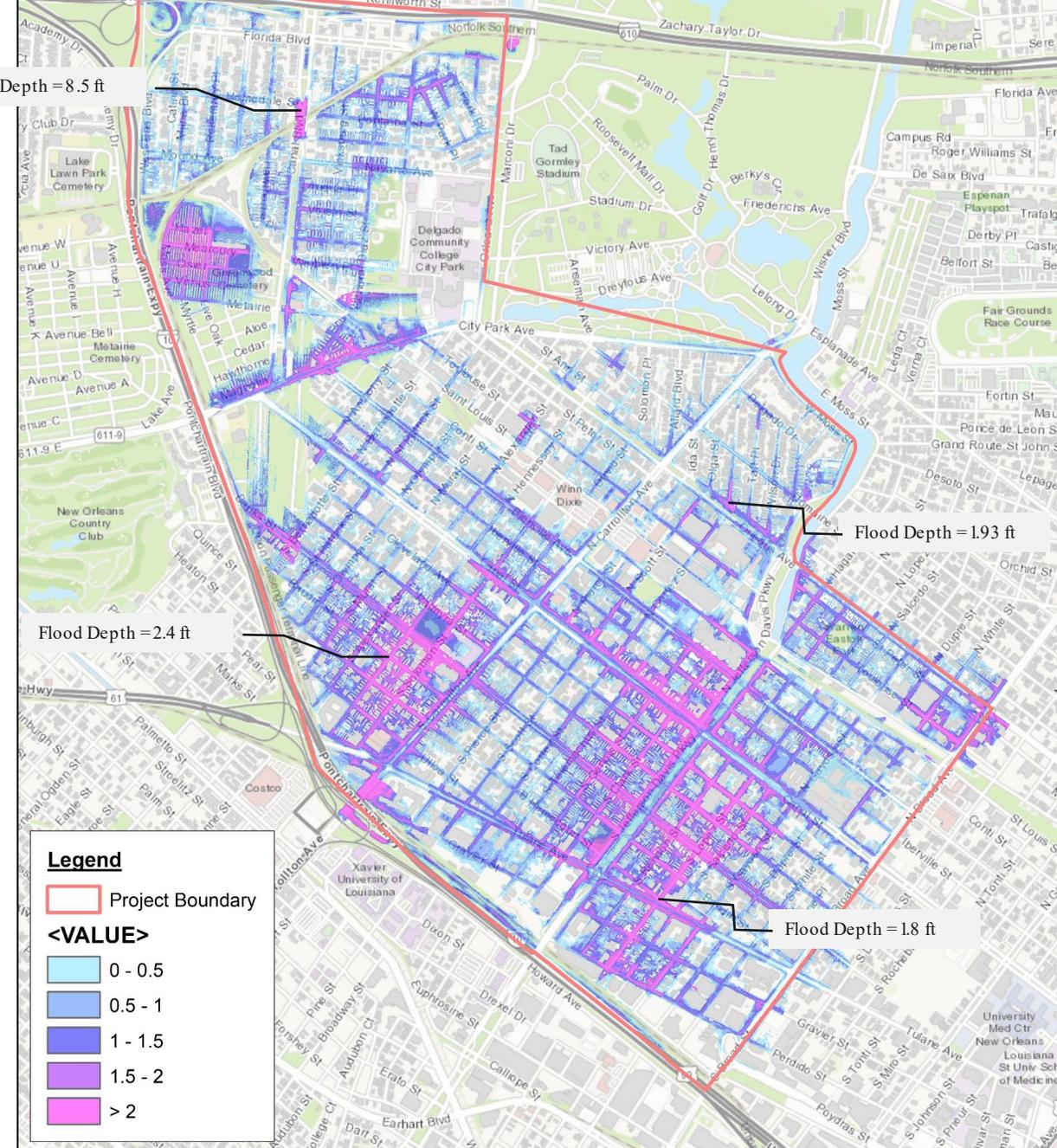




System Understanding

Flood Risk Existing Conditions

- Volume of existing flooding: 32,862,353 CF (245 MGal)
- Deepest Flooding: 8.5 ft at underpass



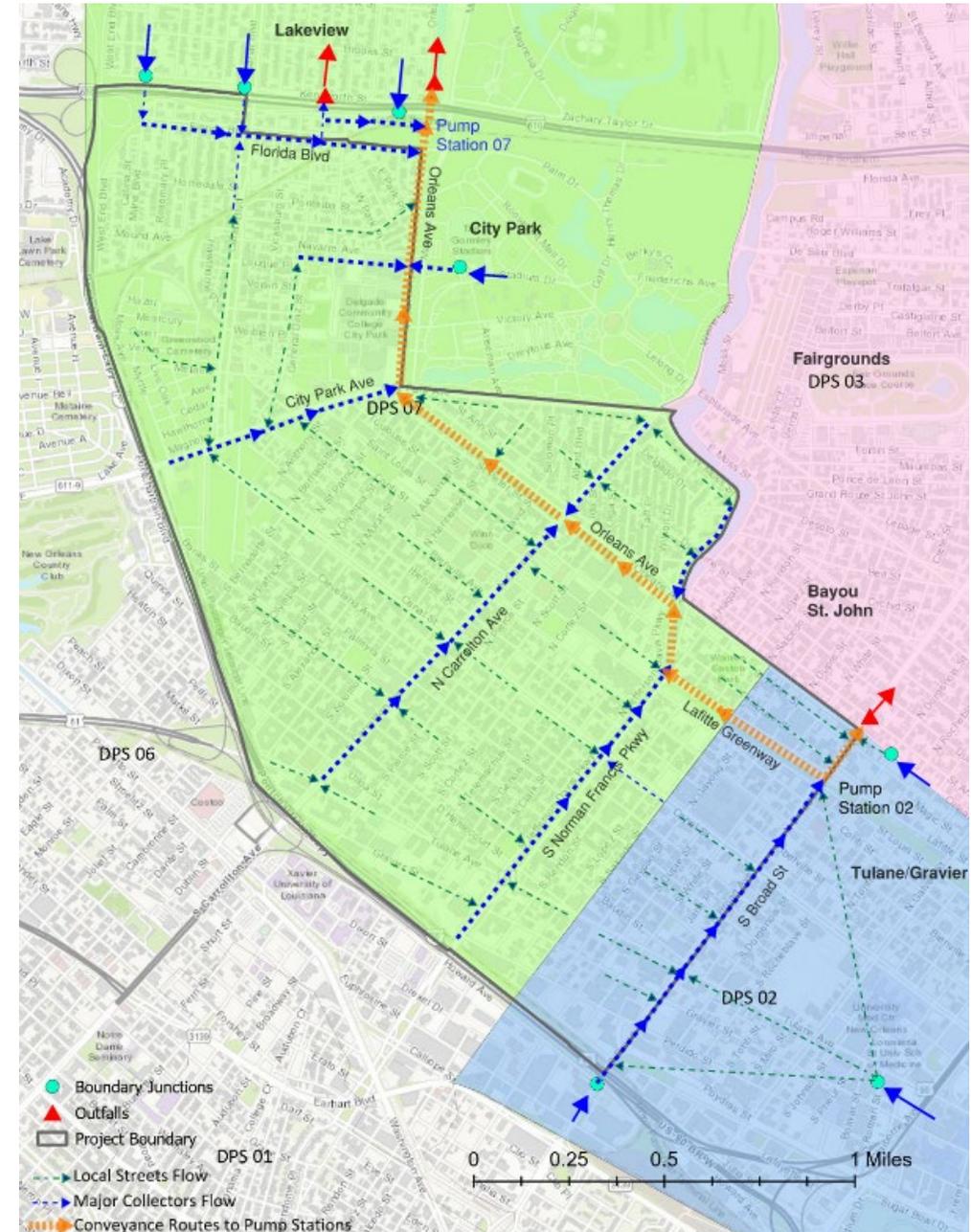
MID CITY, CITY PARK, AND NAVARRE STUDY AREA

0 1,250 2,500 5,000 Feet



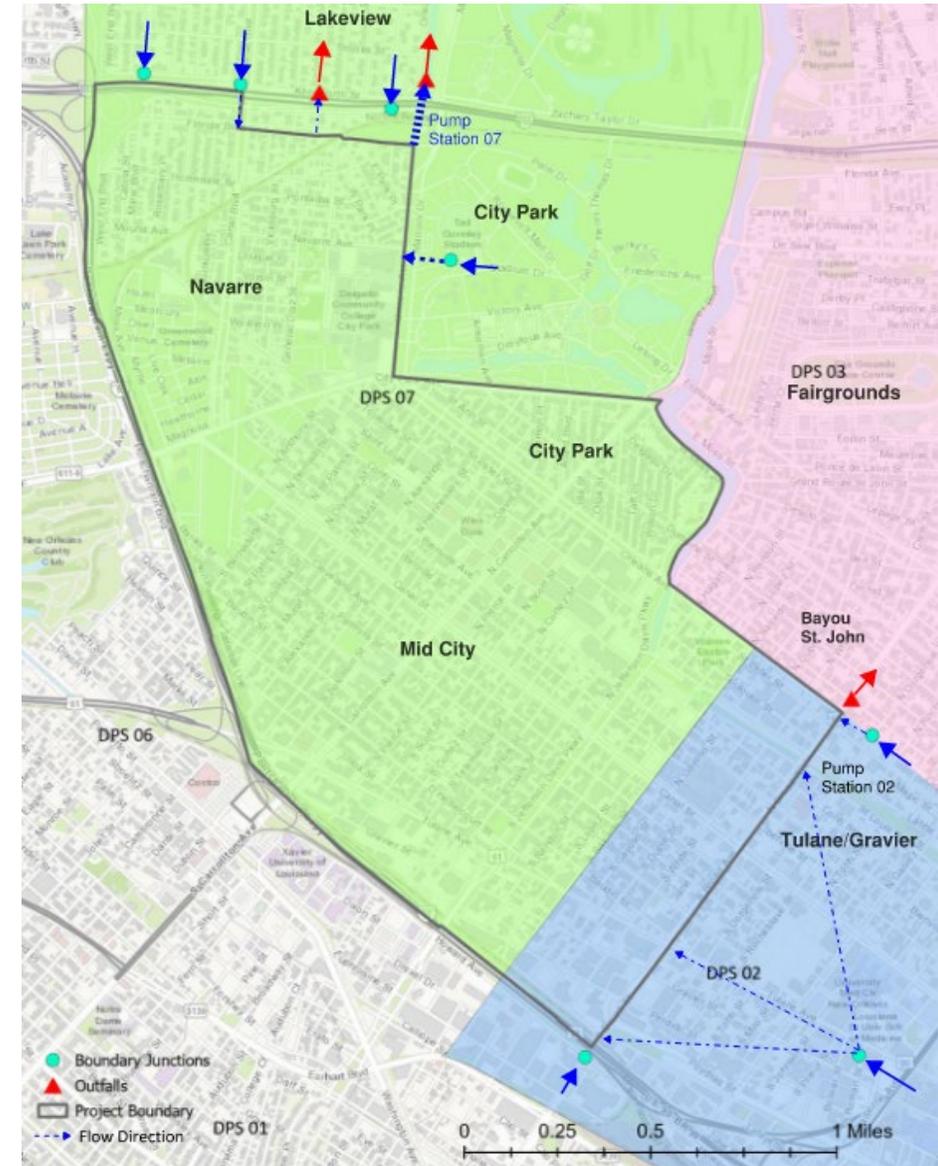
Drainage Characteristics

- The majority of the project area is within Drainage Pump Stations (DPS) 07 service area, with small sections falls within DPS 02 service area
- Rainfall flows along local streets towards 5 major collectors, eventually flowing toward Lake Pontchartrain:
 - Florida Blvd
 - City Park Ave
 - N Carrollton Ave
 - S Norman Francis Pkwy
 - S Broad St
- Drainage flows along S Broad St to DPS 02, then splits east along N Broad St into DPS 03 and north to Lafitte Greenway toward DPS 07 via Orleans Ave, collecting water from S Norman Francis Pkwy, N Carrollton Ave, City Park Ave, and Florida Blvd consecutively



Drivers of Flooding

- Mainly, flooding in the project area is caused by rainfall (10-yr storm)
- The project area system is connected to the neighboring DPS service areas at 10 connections, 7 of which contribute inflow to the system
 - Flow enters from DPS 07 service area from 3 connections north and 1 connection east (total of 342 MG)
 - Flow enters from DPS 03 service area from a connection south (total of 50 MG)
 - Flow enters from DPS 02 service area from a connection south and a connection west (total of 150 MG)
- Drainage exits the system primarily at 3 locations DPS 07 (715 MG), DPS 02 (211 MG), and General Diaz St (52 MG)



Drivers of Flooding: No External Inflows Simulation

— **No-Inflow System** : all inflows from neighboring communities entering the system are eliminated

— The model receives water two ways:

1. Rainfall

- 10-year volume = 376 MG

2. Inflow from neighboring communities

- Lakeview = 142 MG

- City Park = 201 MG

- South = 199 MG

- Total volume from neighbors = 542 MG

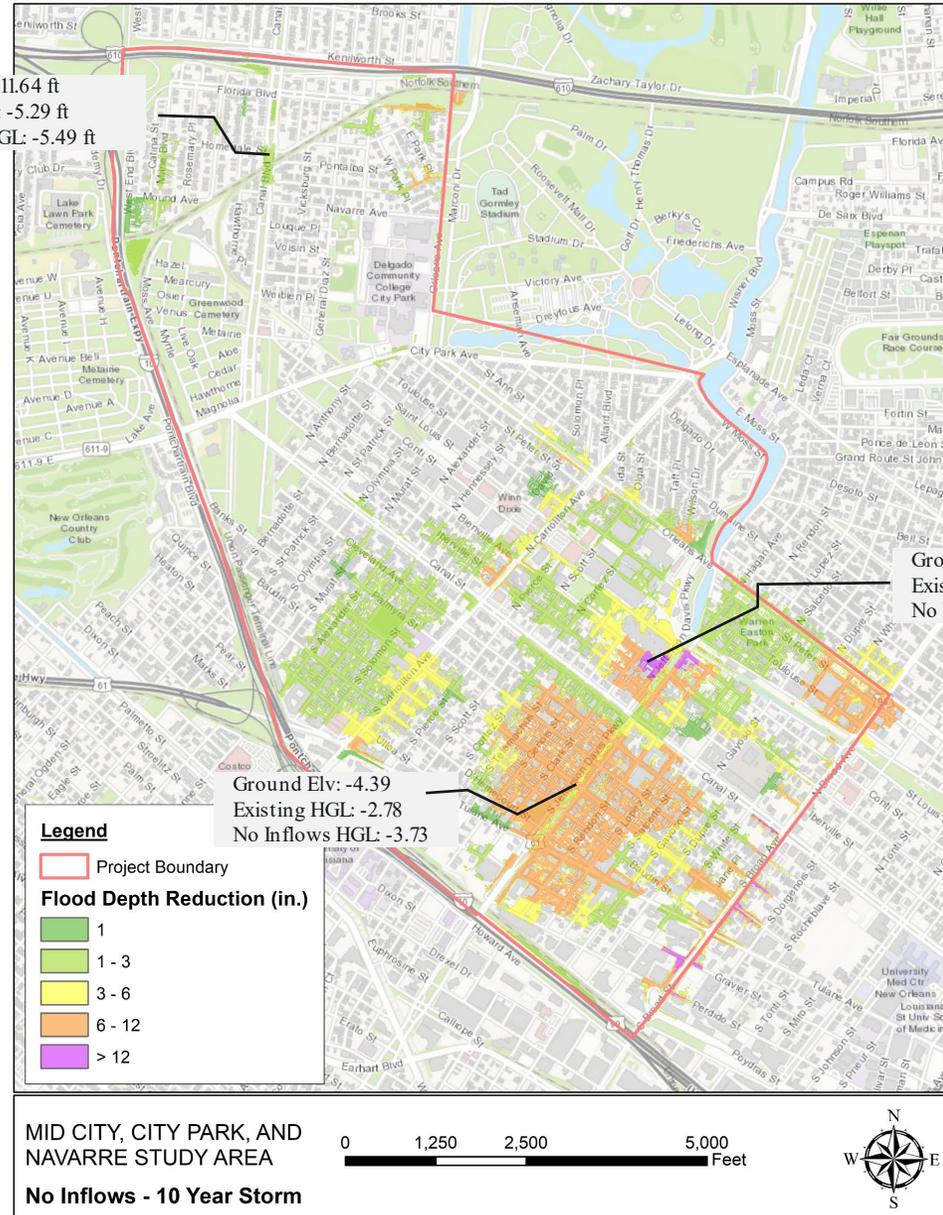
— Average WSE Reduction Estimate (10-yr):

4.96 inches

Ground Elv: -11.64 ft
Existing HGL: -5.29 ft
No Inflows HGL: -5.49 ft

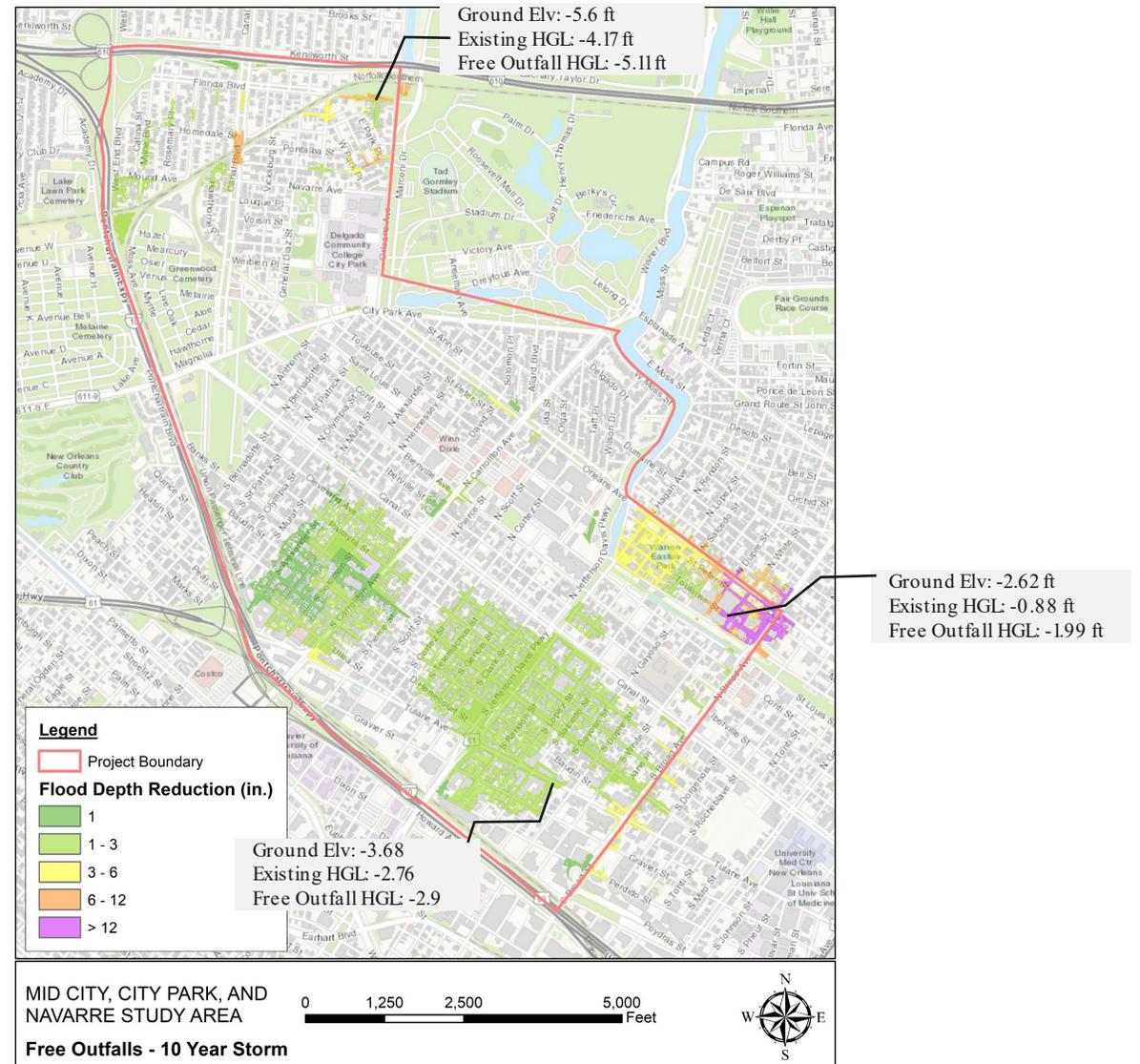
Ground Elv: -4.63 ft
Existing HGL: -2.39 ft
No Inflows HGL: -3.64 ft

Ground Elv: -4.39
Existing HGL: -2.78
No Inflows HGL: -3.73



Drivers of Flooding: Free Outfall Simulation

- **Free Outfall System**: all flow exiting the system are out falling freely
- Outfalls in this model usually have dynamic conditions, allowing more or less water to drain from the area based on water levels
- Free Outfall Scenario Simulation results show:
 - Hagan-Lafitte flooding significantly impacted by outfall conditions
 - Approximately 8 inches of flooding reduced at the Canal-Railroad underpass
- Average WSE Reduction Estimate (10-yr): 2.88 inches



City Park – Water System

Drainage and Surface Water flow, Intakes, Pumps and Outfalls



BATTURE - WAGGONER & BALL - BIOHABITATS - EUSTIS - GREENPOINT - ROSTAN - WINGATE

Image from City Park Hazard Mitigation Project



Approach

Green Infrastructure Tools

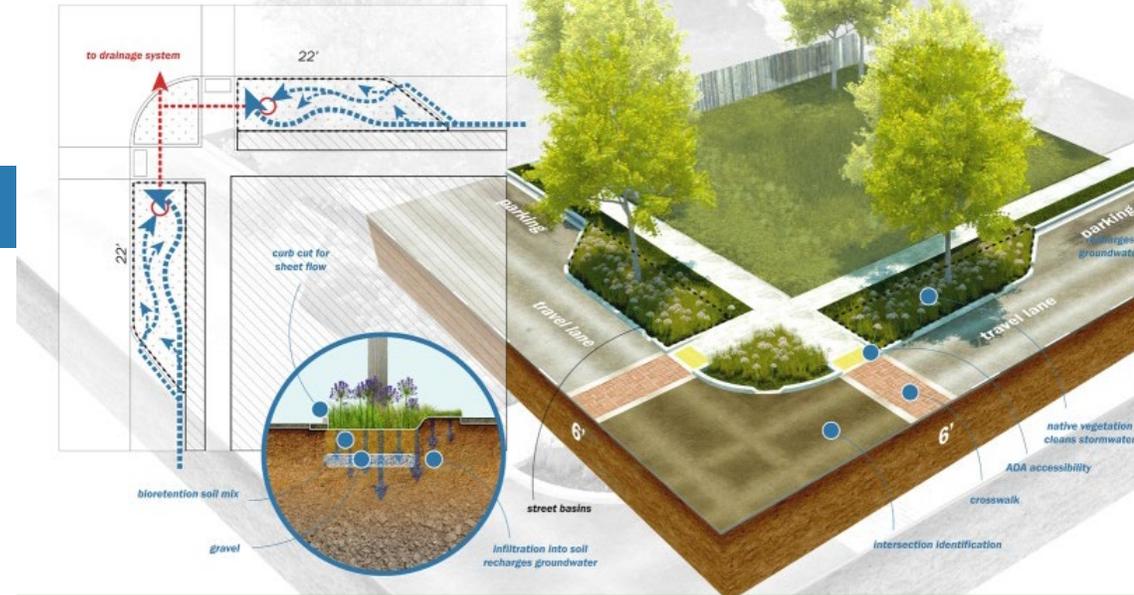
Solutions that Address More than One Issue

- Drainage
- Water Quality
- Traffic Calming
- Walkability
- Aesthetics

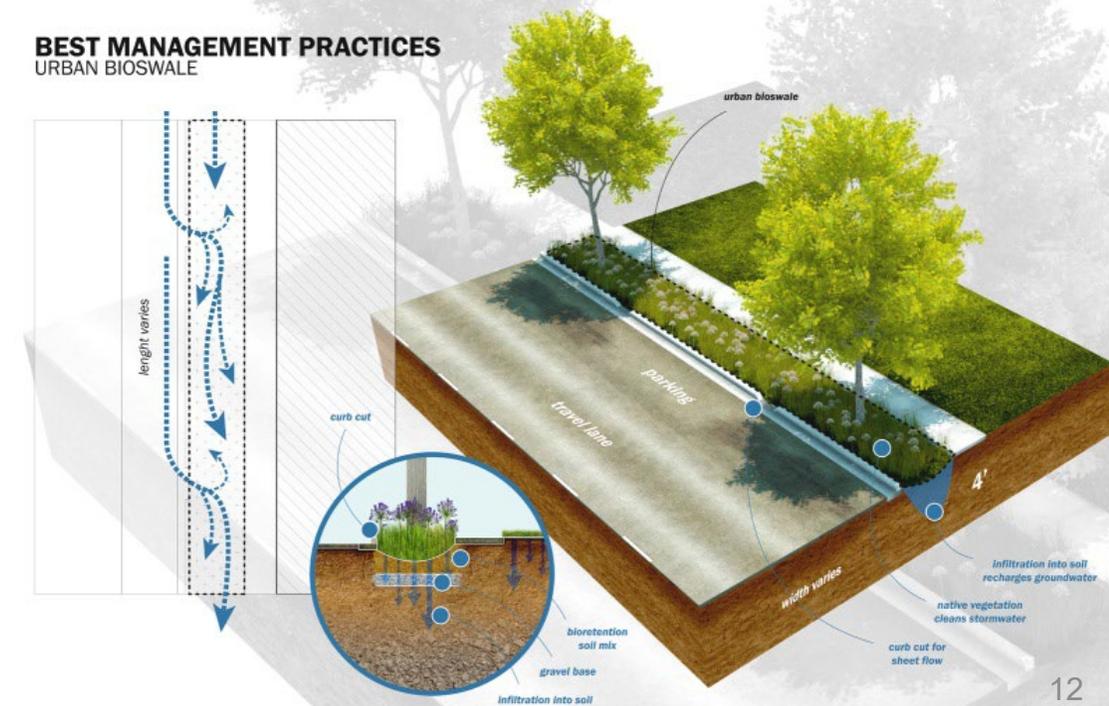
Variable Scale

- Tree well
- Street corner
- Utility strip
- Residential lot

BEST MANAGEMENT PRACTICES
CORNER STREET BASIN
Approx. 450 sqft.



BEST MANAGEMENT PRACTICES
URBAN BIOSWALE





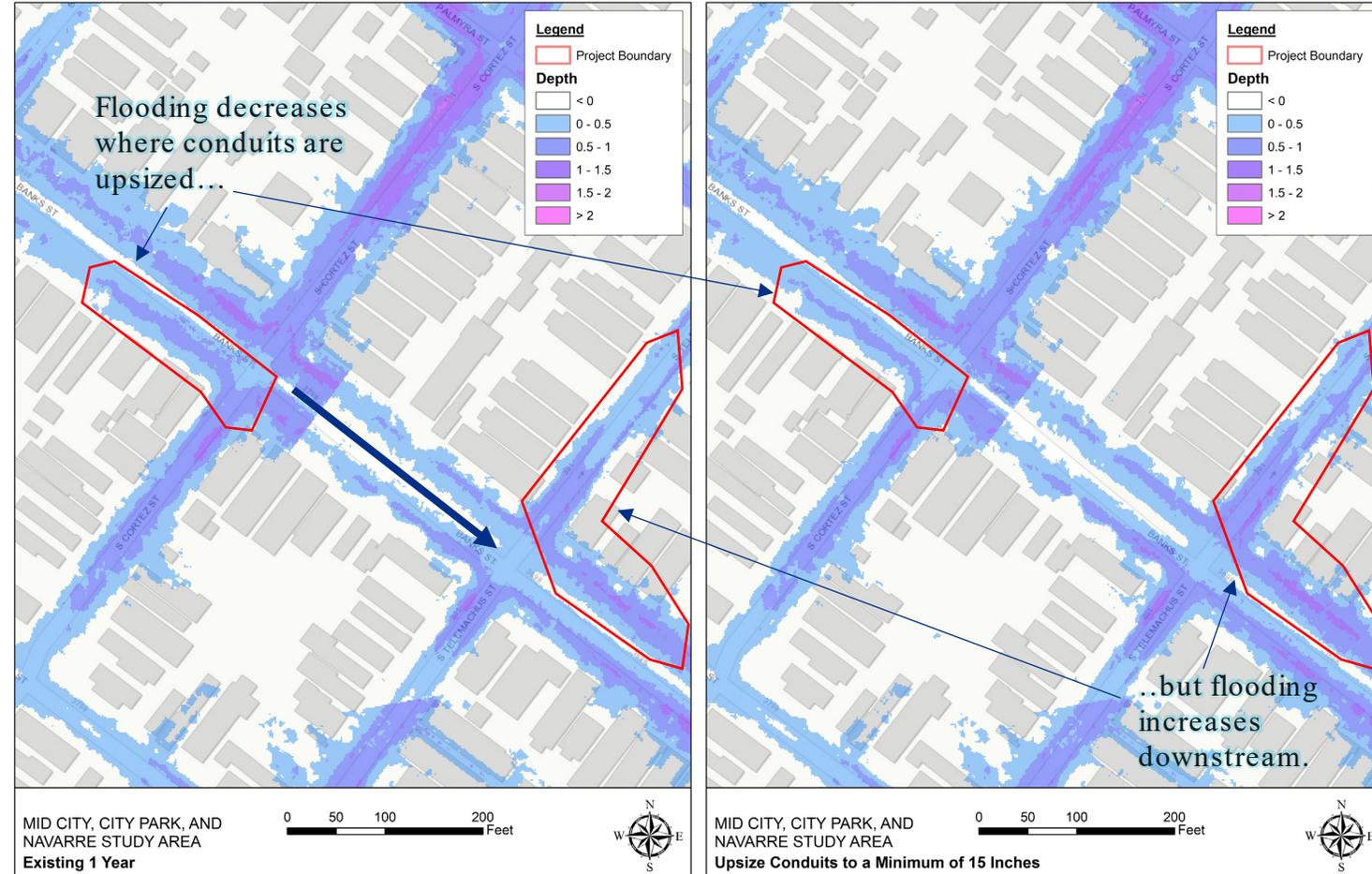
Green Infrastructure Score (From Danielle)

Upsize Conduits to a Minimum of 15 inches

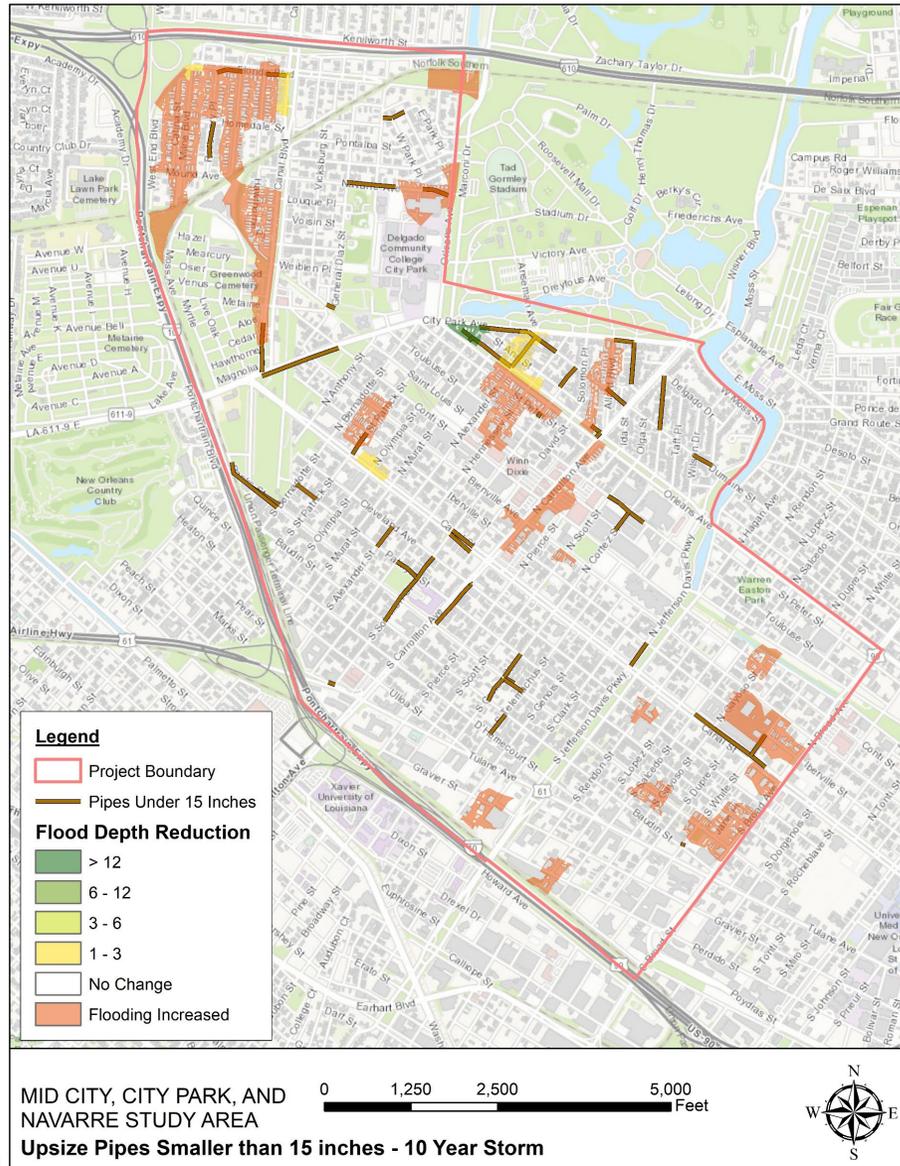
Project Details

- Concept: Upsize existing conduits to be the new city standard of a minimum of 15 inches
- Considerations: An evaluation should be completed to see what additional conduits should also be upsized to avoid downstream flooding; or
- Upsizing should be done on a project basis and the project can determine the extent of upsizing

Graphics



Pipes Under 15 Inches



	Blocks	Linear Feet
10" in Model	62	13,361
12" in Model	54	14,385
Total in Model	116	27,746

- 8.7% of pipe in model needs to be upsized

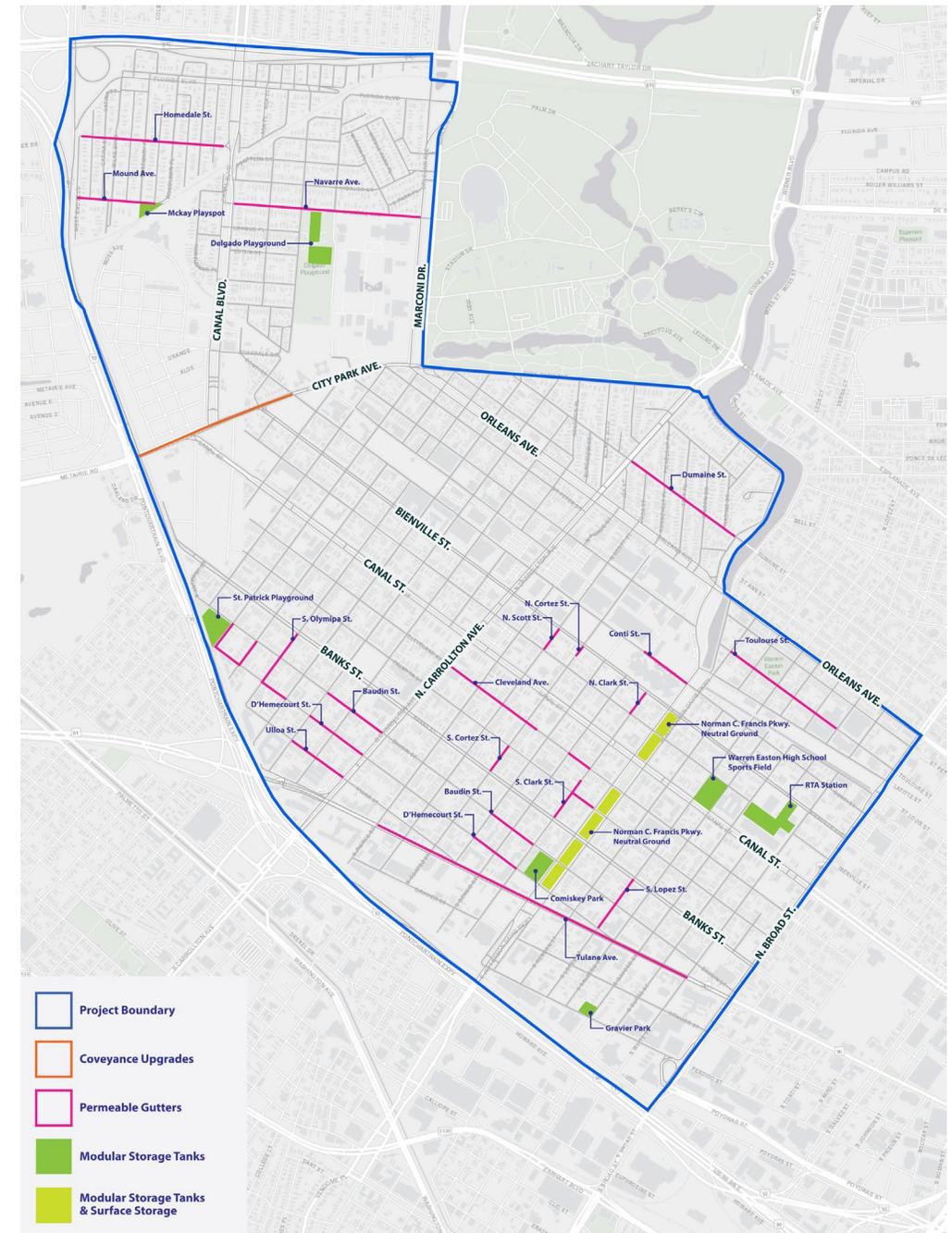


Neighborhood Projects

Proposed Projects: Overview

Project types include:

- Pipe Upgrades
- Permeable Gutters
- Modular Subsurface Storage Tanks
- Modular Storage Tanks + Surface Storage



Proposed Projects: Priority Matrix

Priority	Project Name	Green Infrastructure Score	Volume of Flooding Reduced (MG)	Average Flood Reduction (in.)*	Cost (\$M)
1	Modular Storage Tank at Comiskey Park	17	1.15	0.29	4.62
2	Upsize Existing Pipes Along City Park Ave	311	1.12	2	4.8
3	Modular Storage Tank at Warren Easton Field and RTA	3	2.15	4	9.36
4	Modular Storage Tank at St Patrick Playground	19	0.42	1.49	9.96
5	Permeable Gutters Near Banks St	219	0.38	0.5	9.48
6	Bioswale and Modular Storage at Mound Park	55	0.65	4	25.2
7	Permeable Gutters and Bioswale along Homedale St	88	0.06	0.23	5.28
8	Modular Storage along Norman C Francis	62	-	-	-

*Average Flood Reduction = volume of flooding reduced/ footprint of flood reduction

Modular Storage Tank at Comiskey Park - Details



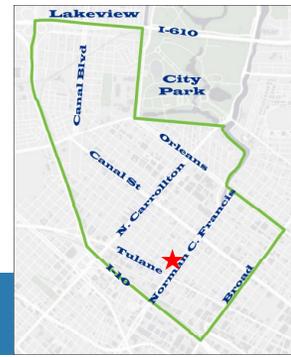
Project Details

- Concept: Install modular subsurface storage tank in Comiskey Park
- Considerations:
 - City-owned property
 - Avoid tree impact
- Average WSE Reduction Estimate (10-yr): < 1 inches
- Volume Stored: 107,200 cu.ft. (0.80 MG)
- Cost Estimate: \$4,620,000
 - Construction: \$3,850,000
 - Design: \$770,000

Graphics

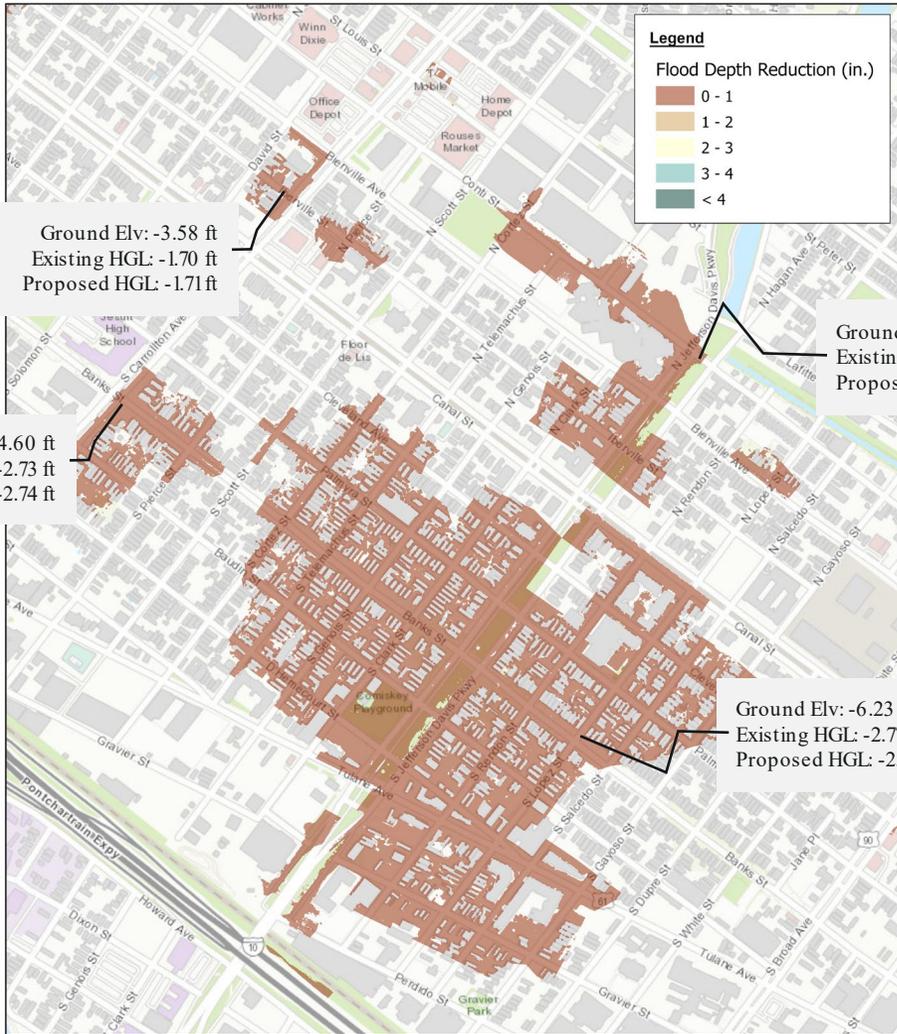


Modular Storage Tank at Comiskey Park - Benefits



Reduction in Flooding

Impact to Community

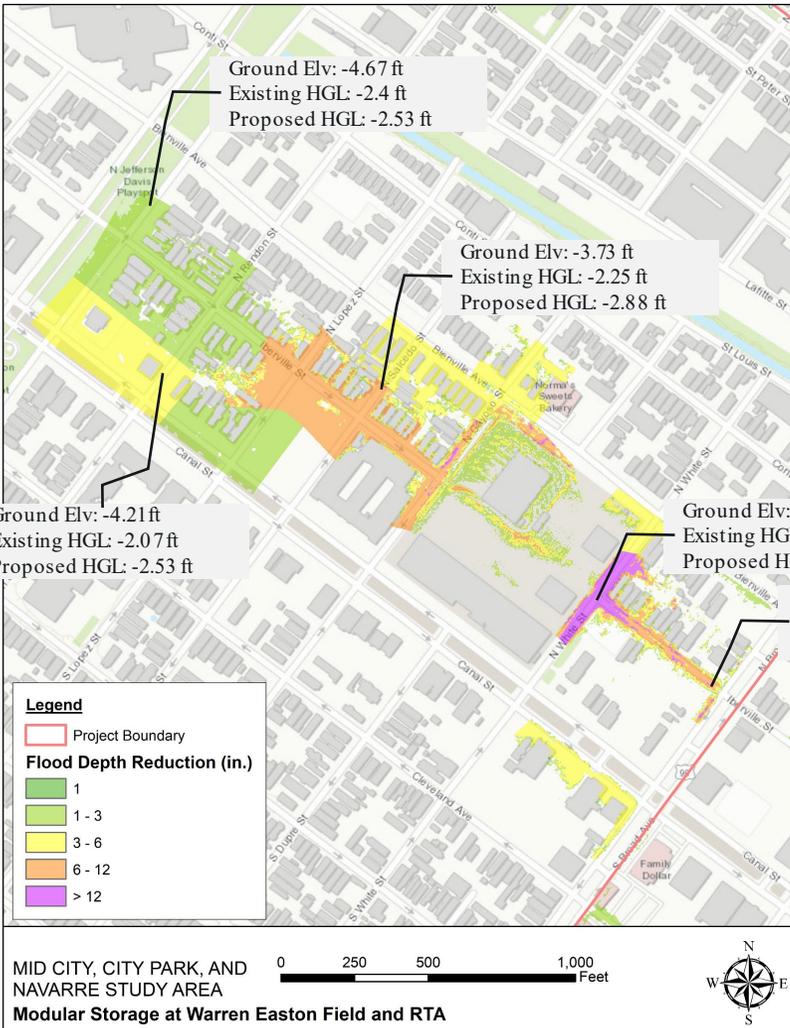


- Volume of reduction: 178,772 cu.ft.
- Footprint of reduction: 7,422,633 sq.ft. (change to acres)
- Average reduction (Vol/Area): 0.02 ft = 0.29 in

Modular Storage Tank at RTA and Warren-Easton - Benefits



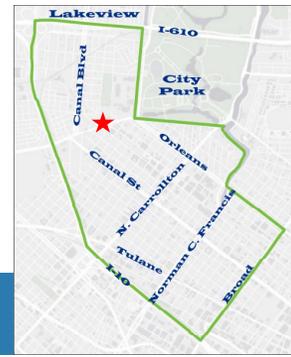
Reduction in Flooding



Impact to Community

- Volume of reduction: 334,103 ft³
- Footprint of reduction: 1,024,207 ft²
- Average reduction (Vol/ Area): 0.33 ft = 4 in

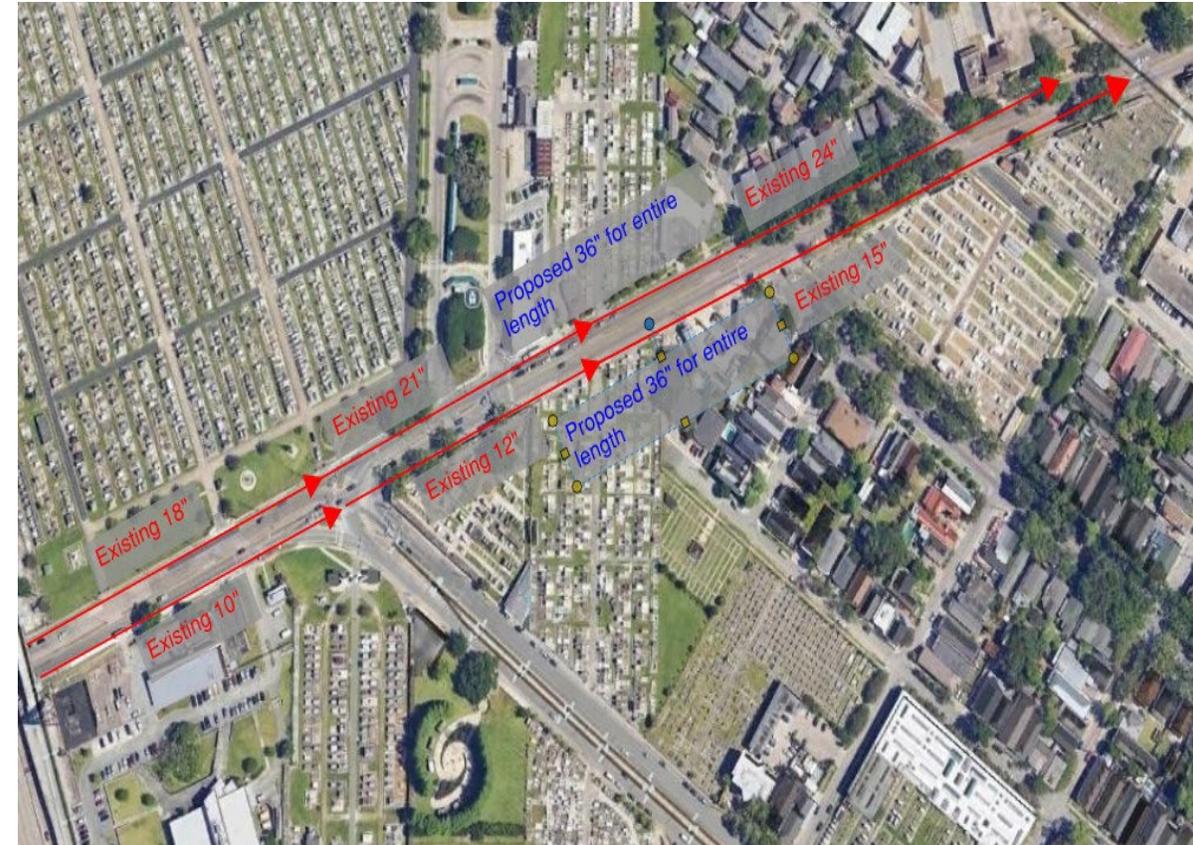
Pipe Upgrades along City Park Avenue



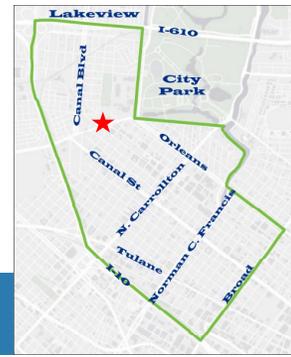
Project Details

- Concept: Upsize existing infrastructure beneath City Park Avenue
- Considerations:
 - Condensed, High Traffic Area.
- Average WSE Reduction Estimate (10-yr): 2 inches
- Volume Stored: 38,889 cu.ft. (0.25 MG)
- Cost Estimate: \$4,800,000
 - Construction: \$4,000,000
 - Design: \$800,000

Graphics

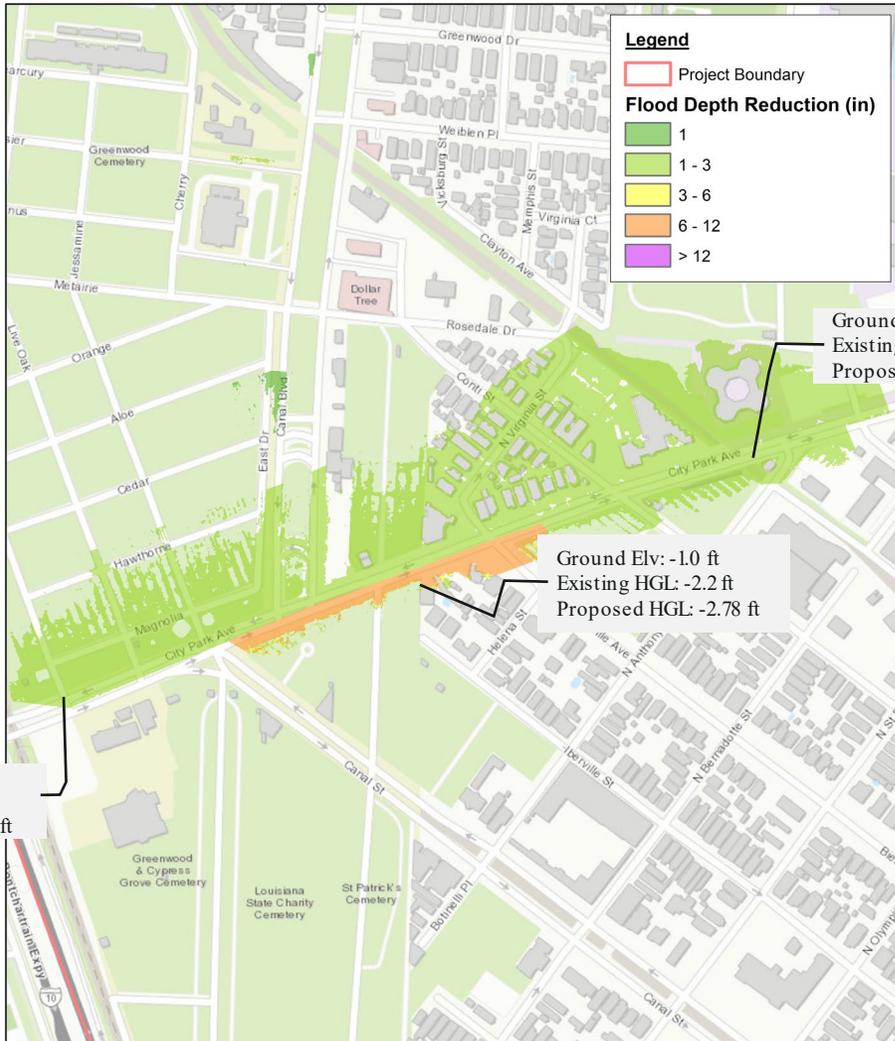


Pipe Upgrades along City Park Avenue-Benefits



Reduction In Flooding

Impacts to Community

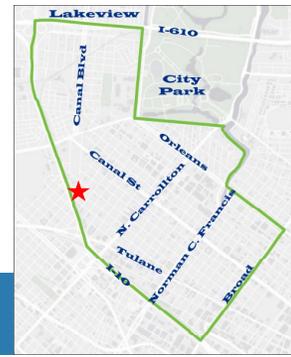


- Volume of reduction: 173,594 ft³
- Footprint of reduction: 953,969 ft²
- Average reduction (Vol/ Area): 0.18 ft = 2 in

Ground Elv: -2.0 ft
Existing HGL: -2.59 ft
Proposed HGL: -2.43 ft



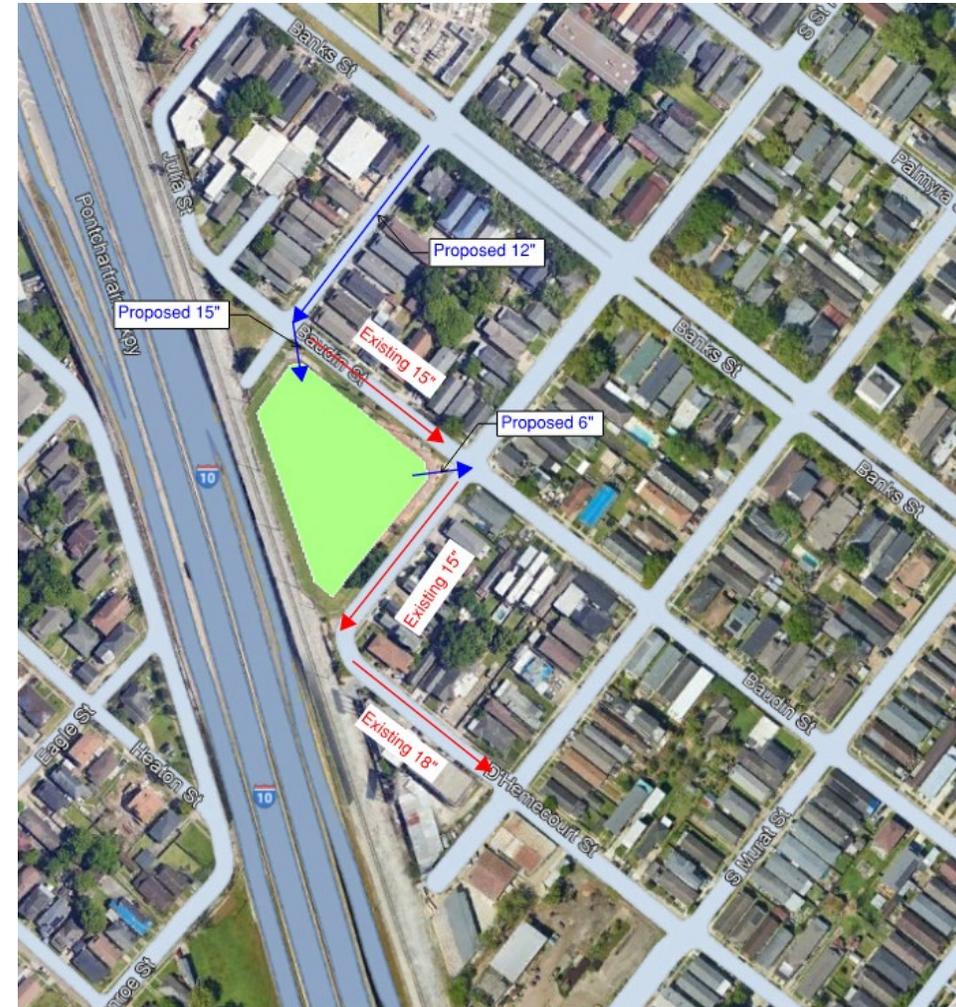
Modular Storage Tank at St Patrick Park - Details



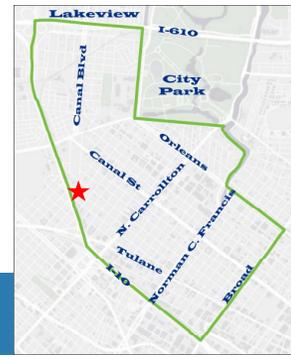
Project Details

- Concept: Install modular subsurface storage tank in St Patrick Park
- Considerations:
 - City-owned property
 - Avoid tree impact
- Average WSE Reduction Estimate (10-yr): 1.49 inches
- Volume Stored: 152,380 cu.ft. (1.14 MG)
- Cost Estimate: \$9,960,000
 - Construction: \$8,300,000
 - Design: \$1,660,000

Graphics

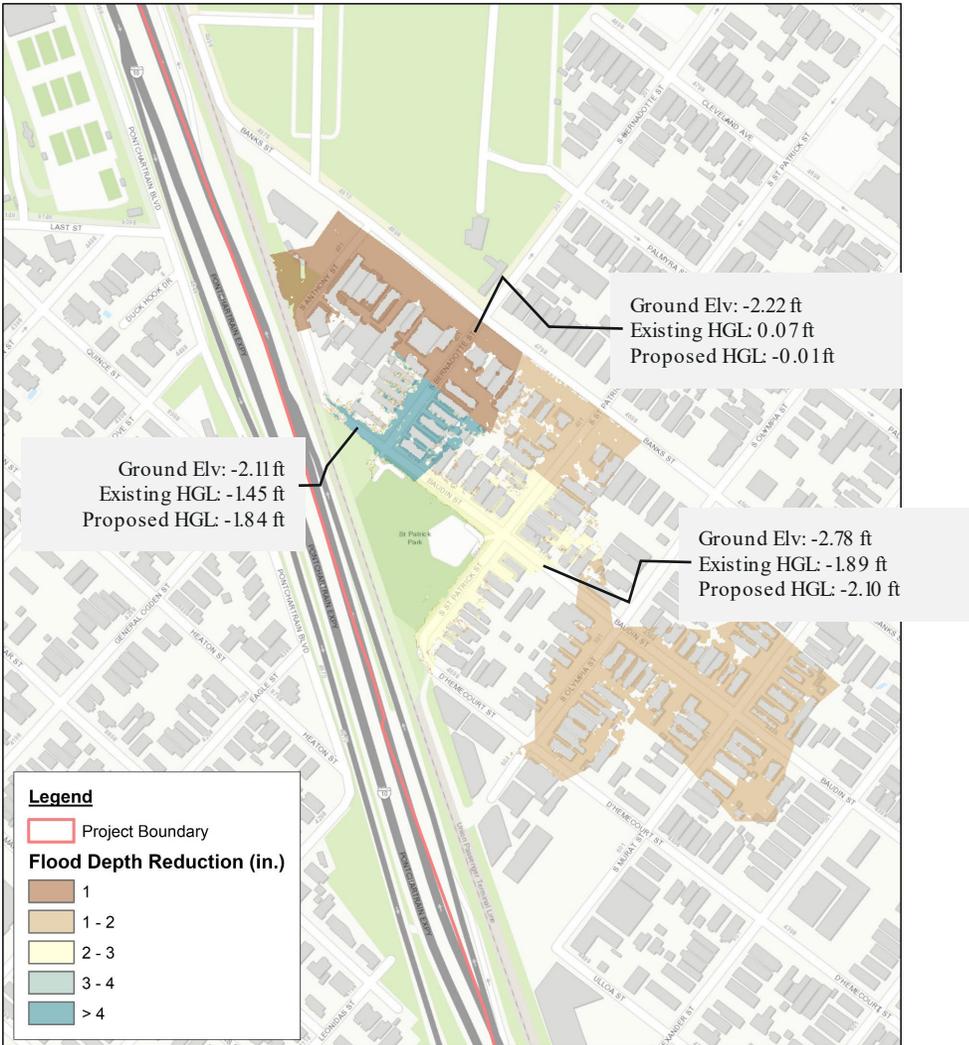


Modular Storage Tank at St Patrick Park - Benefits



Reduction in Flooding

Impact to Community



- Volume of reduction: 65,138 ft³
- Footprint of reduction: 524,716 ft²
- Average reduction (l): 0.12 ft = 1.49 in
- Upgrade / landscape and program park space.

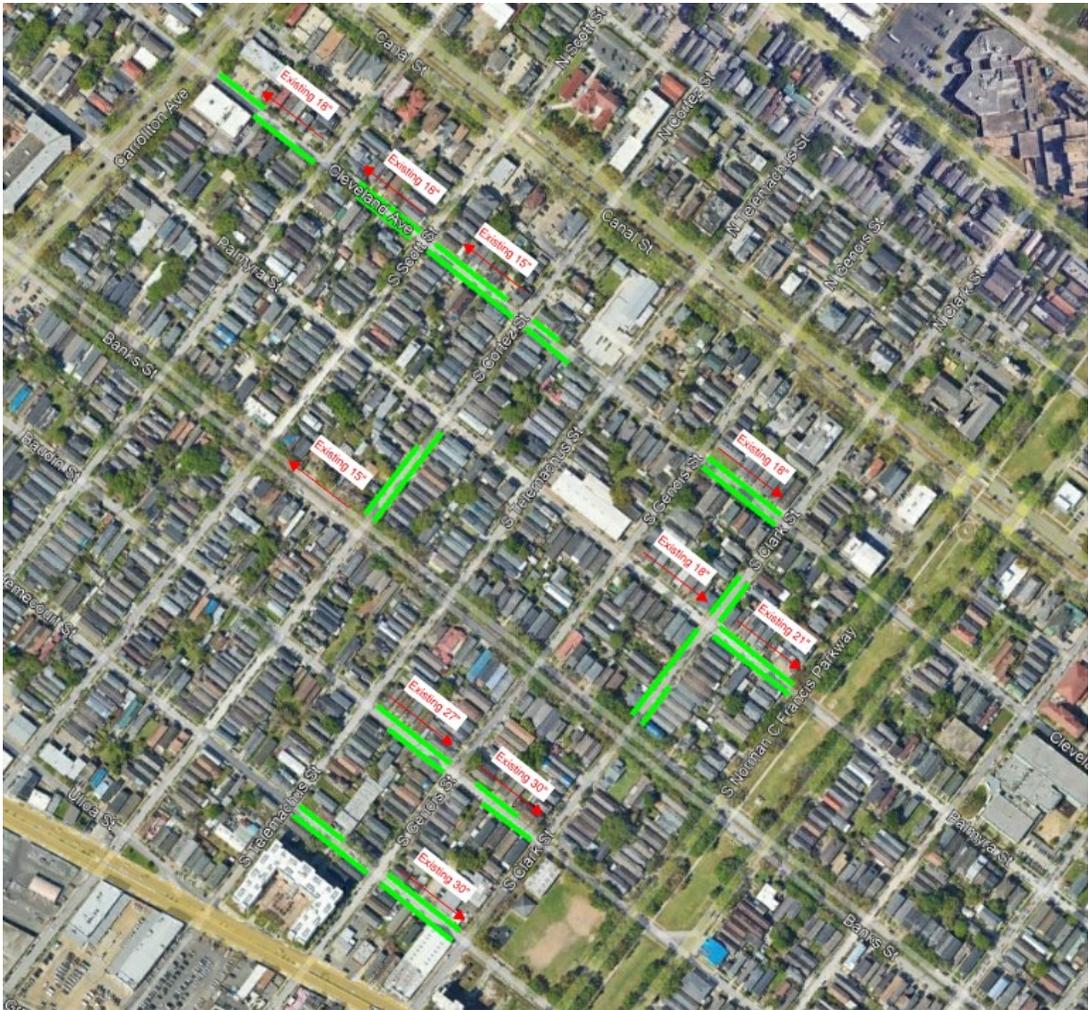
Permeable Gutters near Banks St - Details



Project Details

- Concept: Install Permeable Gutter along the side streets along Banks St
- Considerations:
 - Trees along the sidewalk limit where we can install subsurface storage.
- Average WSE Reduction Estimate (10-yr): 0.3 inches
- Volume Stored: 41,343.75 cu.ft. (0.31MG)
- Cost Estimate: \$9,480,000
 - Construction: \$7,900,000
 - Design: \$1,580,000

Graphics

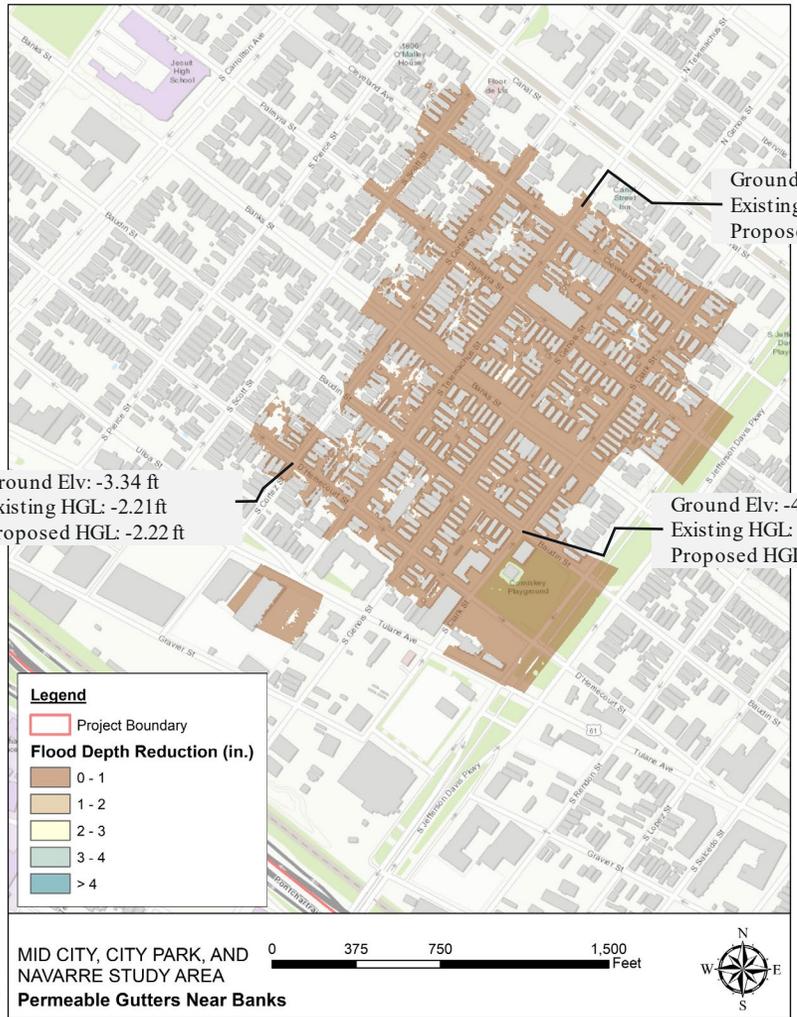


Permeable Gutters near Banks - Benefits



Reduction in Flooding

Impact to Community



- Volume of reduction: 59,141 ft³
- Footprint of reduction: 2,309,632 ft²
- Average reduction (Vol/ Area): 0.03 ft = 0.36 in

Swale along Mound Street with McKay Storage



Project Details

- Concept:
Add subsurface storage within wide R.O.W. along Mound Street and increasing pipe size to direct water to storage
- Average WSE Reduction (10-yr): 4 inches
 - Volume Stored: 10,163 cu.ft. (0.65 MG)
- Average WSE Reduction (10-yr): 4 inches
- Volume Stored: 10,163 cu.ft. (0.65 MG)
- Cost Estimate: \$25,200,000
 - Construction: \$21,000,000
 - Design: \$4,200,000

Graphics



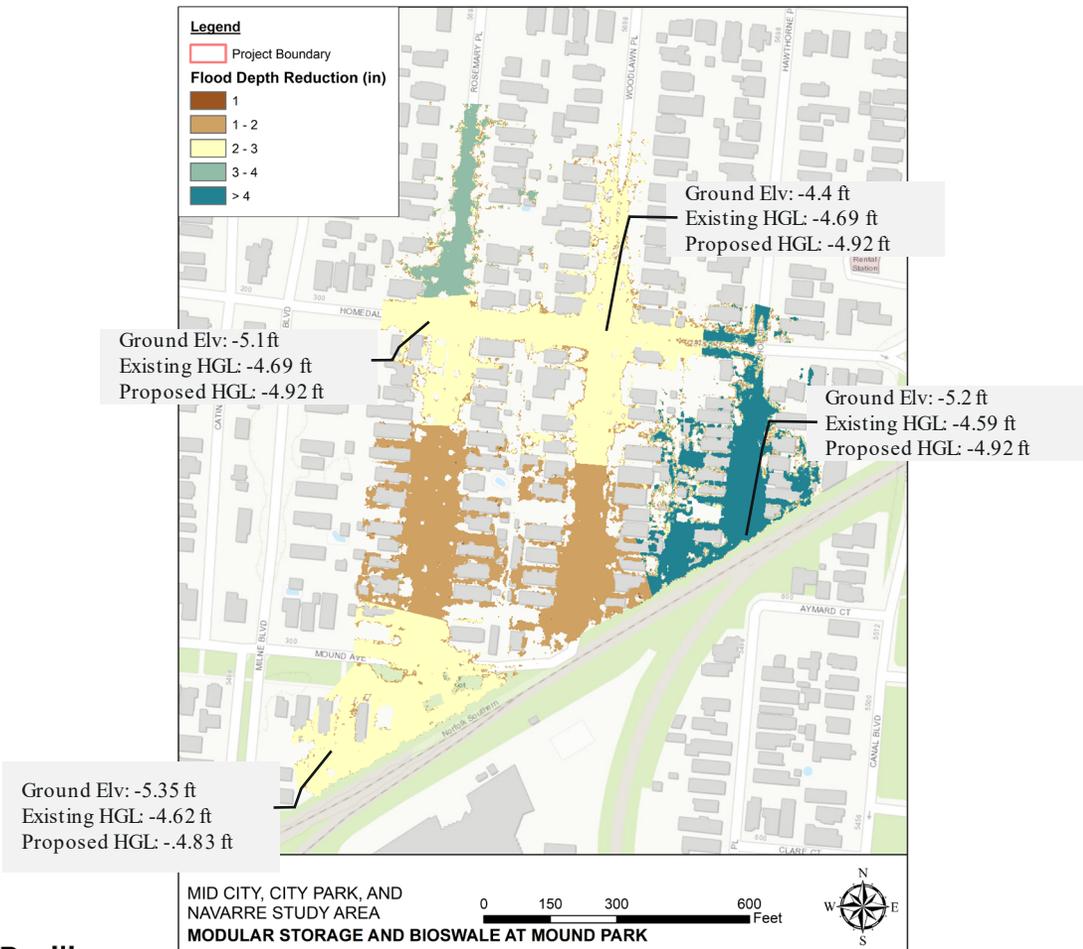
Mound Street and McKay Storage -Benefits



Reduction In Flooding

Impacts to Community

- Volume of reduction: 10,163 ft³
- Footprint of reduction: 480,051 ft²
- Average reduction (Vol/ Area): 0.21 ft = 2.5 in



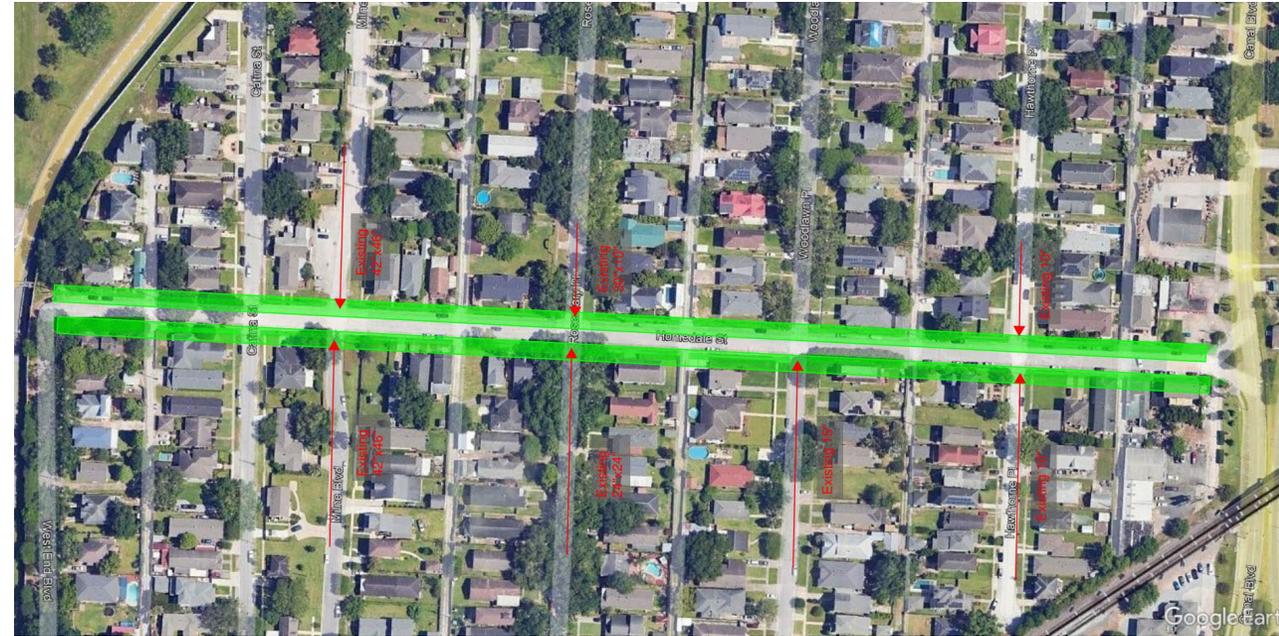
Permeable Gutters along Homedale St



Project Details

- Concept: Install Permeable Gutters and Urban Bioswales along Homedale St
- Considerations:
 - Avoid tree impact
 - Utilize “wide road” for storage
- Average WSE Reduction Estimate (10-yr): ~2 inches
- Volume Stored: **6 156 cu ft (0.02 MG)**
- Cost Estimate: \$5,280,000
 - Construction: \$4,400,000
 - Design: \$880,000

Graphics

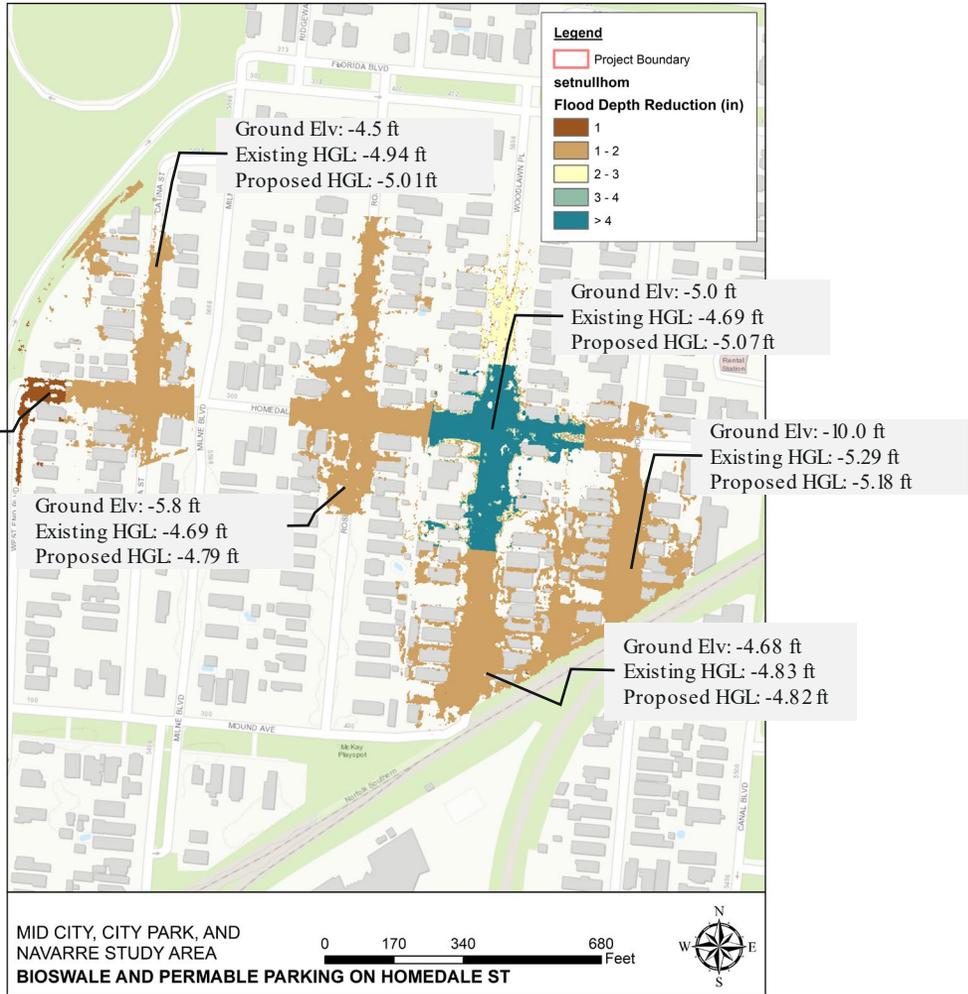


Permeable Gutters along Homedale St - Benefits

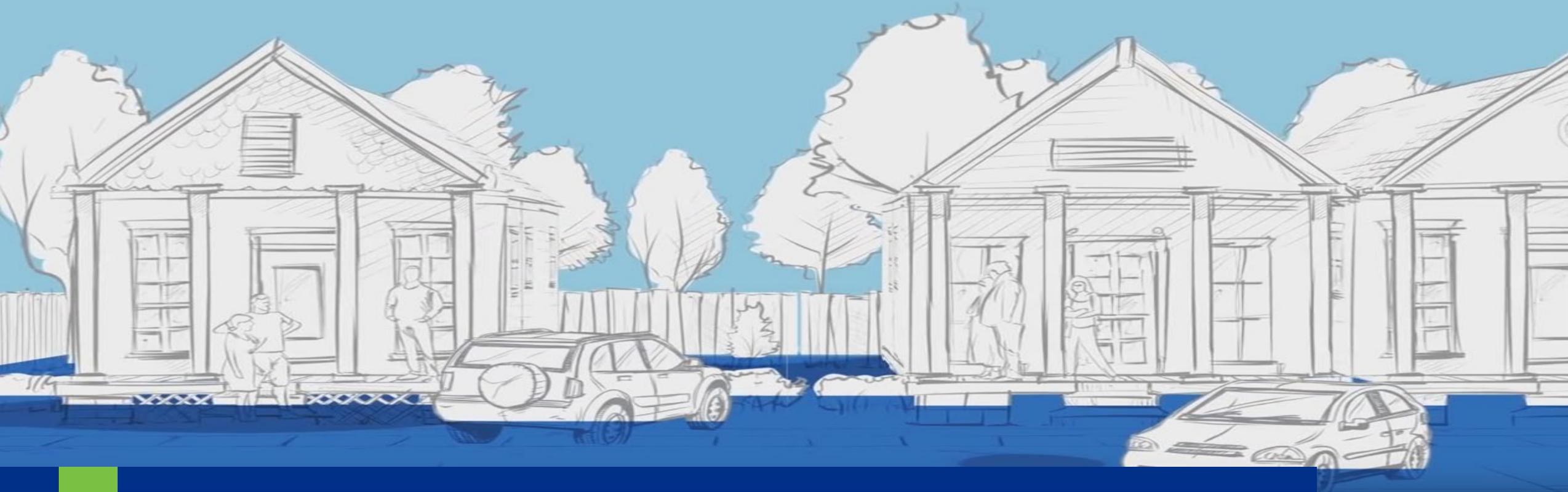


Reduction In Flooding

Impacts to Community



- Volume of reduction: 61,497 ft³
- Footprint of reduction: 397,971 ft²
- Average reduction (Vol/ Area): 0.15 ft = 1.85 in
- Full reconstruction
- Reduce pavement width
- Add vegetation in urban bioswale



Solutions Not Modeled

Incorporation of Green Infrastructure into EVERY ROW Project

- Developing improved standards, details, and design procedures
- Permeable Pavement at ADA Ramps
- Permeable Gutters

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Sustainability**
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Water
Partnership
with **CDM
Smith**

◆ Precious resources ◆ Powerful insights ◆ A future we build together

System Maintenance

- Facilitating maintenance of system
- *Add detail of Catch Basin trap*
- *Costs per Catch Basin*
- *Costs per neighborhood*

-
- Maintenance crew training

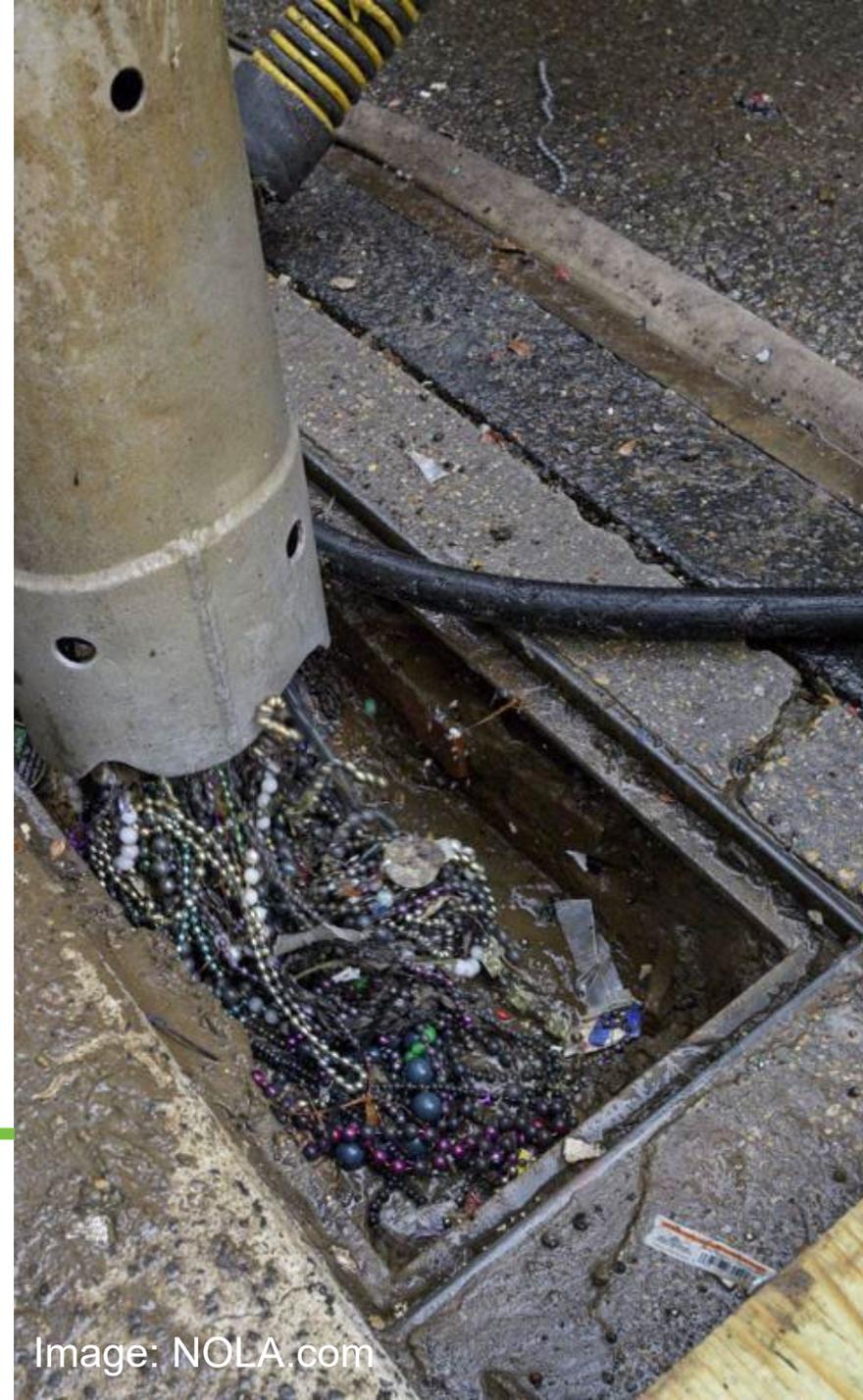


Image: NOLA.com

Green Infrastructure Indicators

- Signage
- Incorporate into GIS database information
- Add area to Louisiana One-Call (Type: Irrigation)
- Painted roadway indicators
- Develop a different casting for the tops of manholes and catch basins in the area

