



City of West University Place

A Neighborhood City

CITY COUNCIL

Bob Higley, Mayor
Kevin Trautner, Mayor Pro Tem
Lauri Lankford, Councilmember
John P. Barnes, Councilmember
Ed Sobash, Councilmember

STAFF

David J. Beach, City Manager
Alan Petrov, City Attorney
Thelma Gilliam, City Secretary

Amended City Council Workshop Agenda

Notice is hereby given of a workshop of the West University Place **City Council** to be held on Monday, **July 20, 2020** beginning at **5:00 p.m.**

Due to the Novel Coronavirus (COVID 19) pandemic and CDC's recommendation regarding social distancing measures, the meeting will be held via teleconference. City Council will be audible to members of the public but there will be no public comments. To view and/or listen to the presentation, use the following link <https://us02web.zoom.us/j/86859881696> or dial 346-248-7799. **The Meeting ID Number 868 5988 1696.**

The workshop agenda is as follows:

1. **Call to Order**
2. **Drainage/Modeling Study**
Matters related to the City's Drainage/Modeling Study and funding sources.
3. **Virtual Gate Discussion**
Matters related to Phase I of the Virtual Gate project.
4. **Adjourn**

In compliance with the Americans with Disabilities Act, if you have a disability that requires special arrangements, please contact City Secretary Thelma Gilliam at 713.662.5813 at least 24 hours prior to the meeting so that, if possible, reasonable accommodations can be made to assist in your participation in the meeting.

I certify that the attached notice and agenda of items to be considered by the West University Place City Council on July 20, 2020 was posted on the Municipal Building bulletin board on July 17, 2020 at approximately 11:00 a.m.

(SEAL)

Thelma A. Gilliam

Thelma A. Gilliam, TRMC, CMC, City Secretary

City of West University Place Citywide Storm Sewer Analysis

July 20, 2020

Prepared for:



Prepared by:

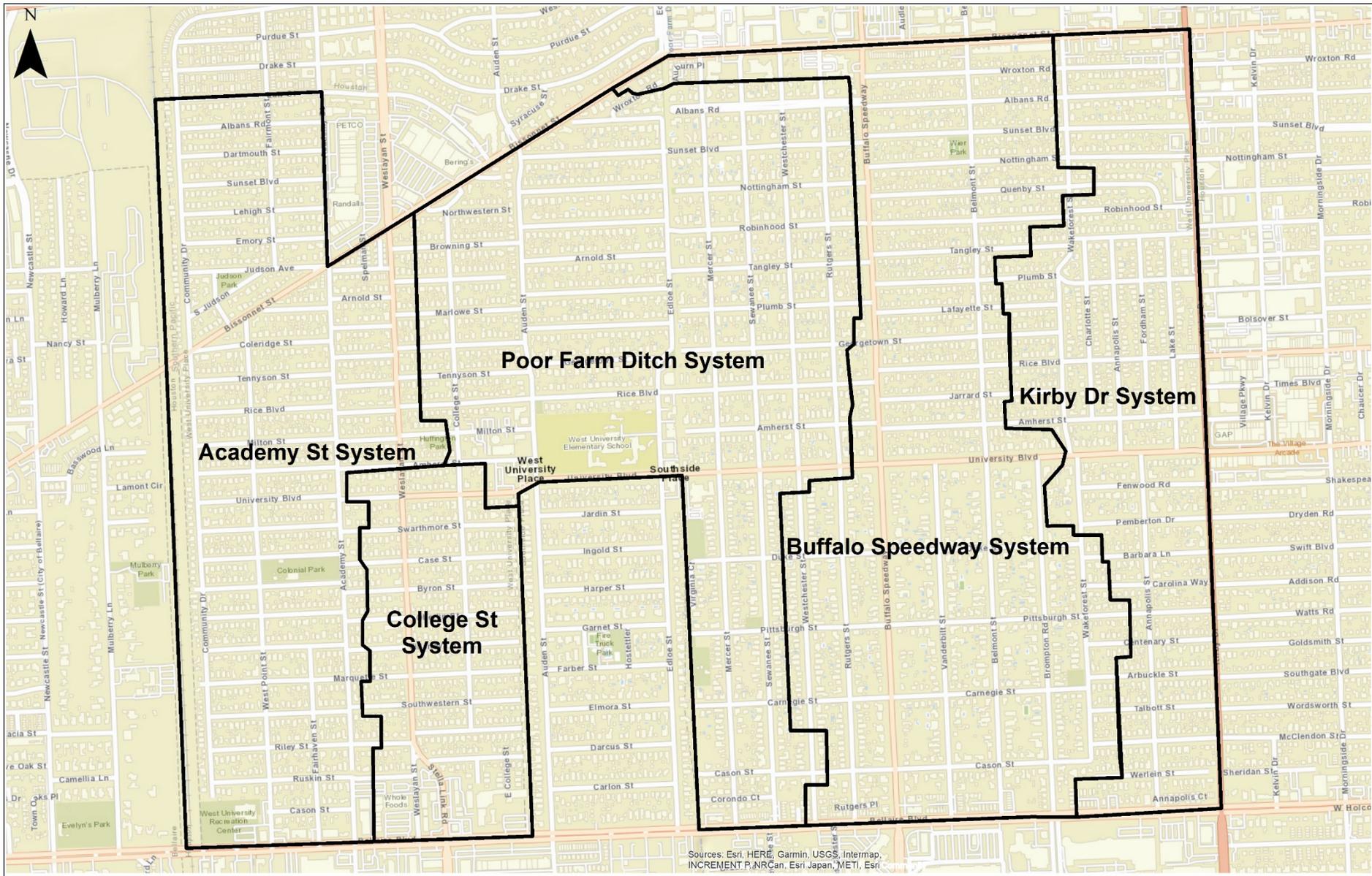


Agenda

Additional Results Discussion

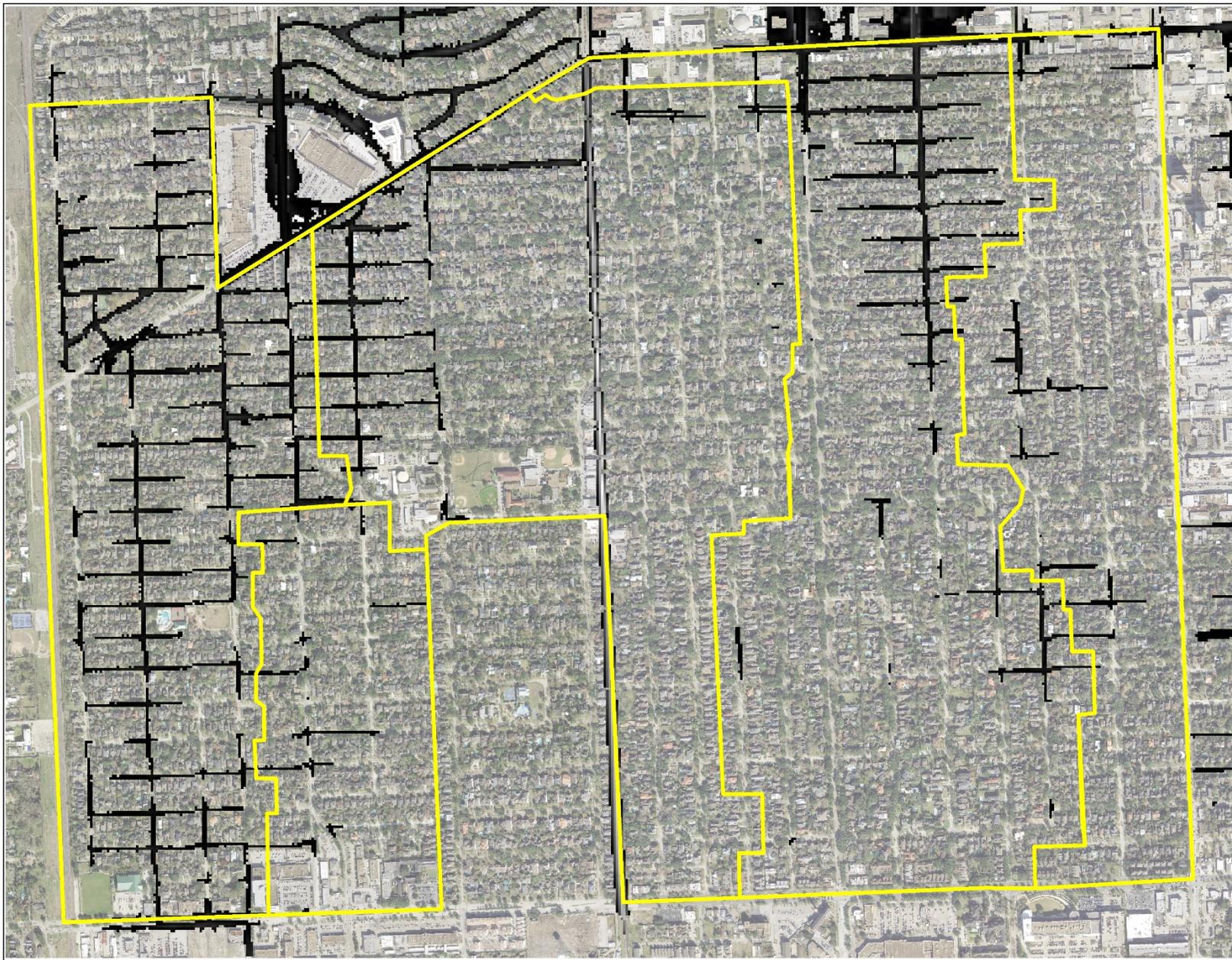
Existing Conditions

Flooding Conditions for Different Rain Events



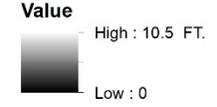
Major Drainage Systems

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China

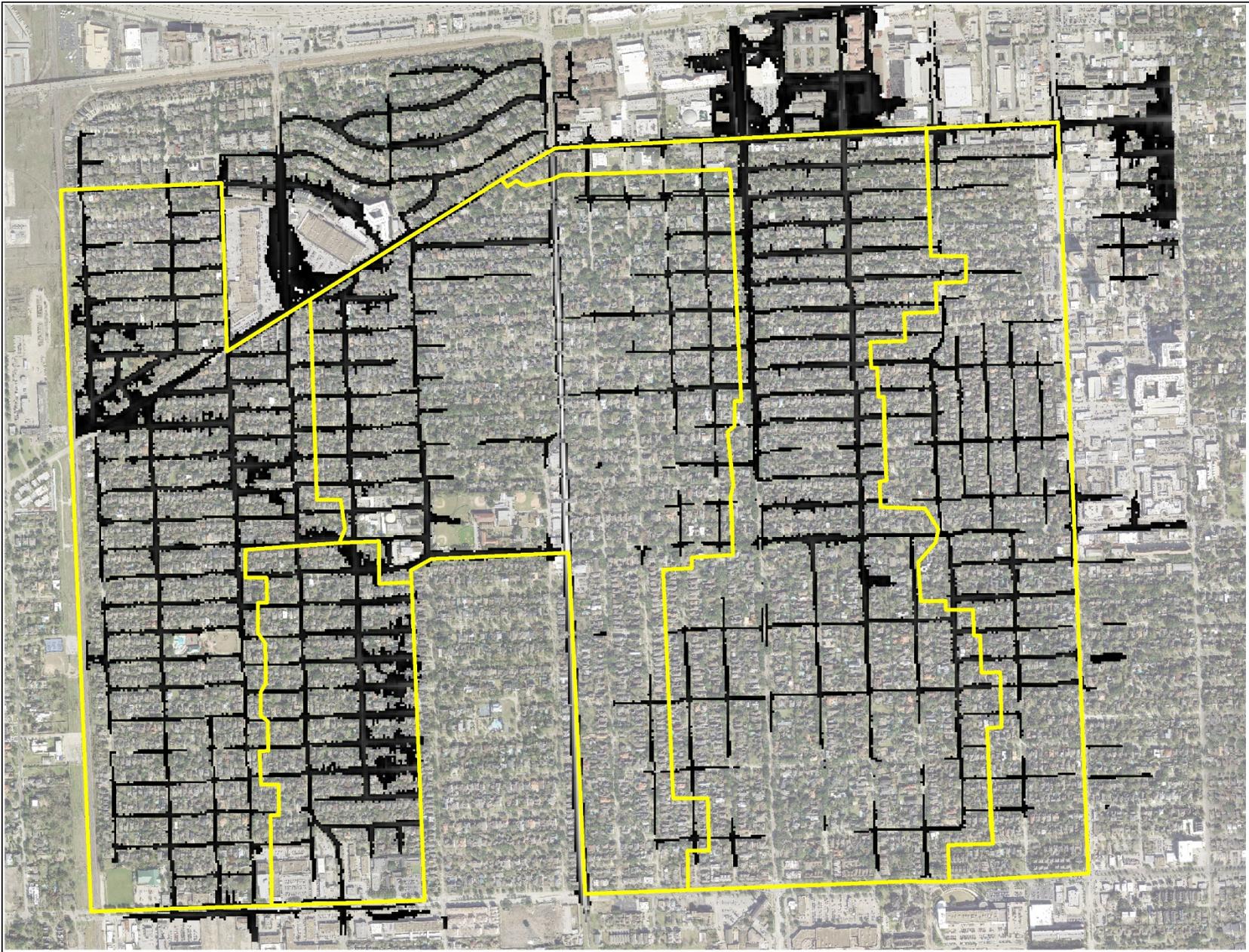


Legend

Existing 2-Year Scenario



Existing 2-Year Event
Inundation Map



Legend

Existing 10-Year Scenario

Value
High : 8.5 FT.
Low : 0

Existing 10-Year Event
Inundation Map

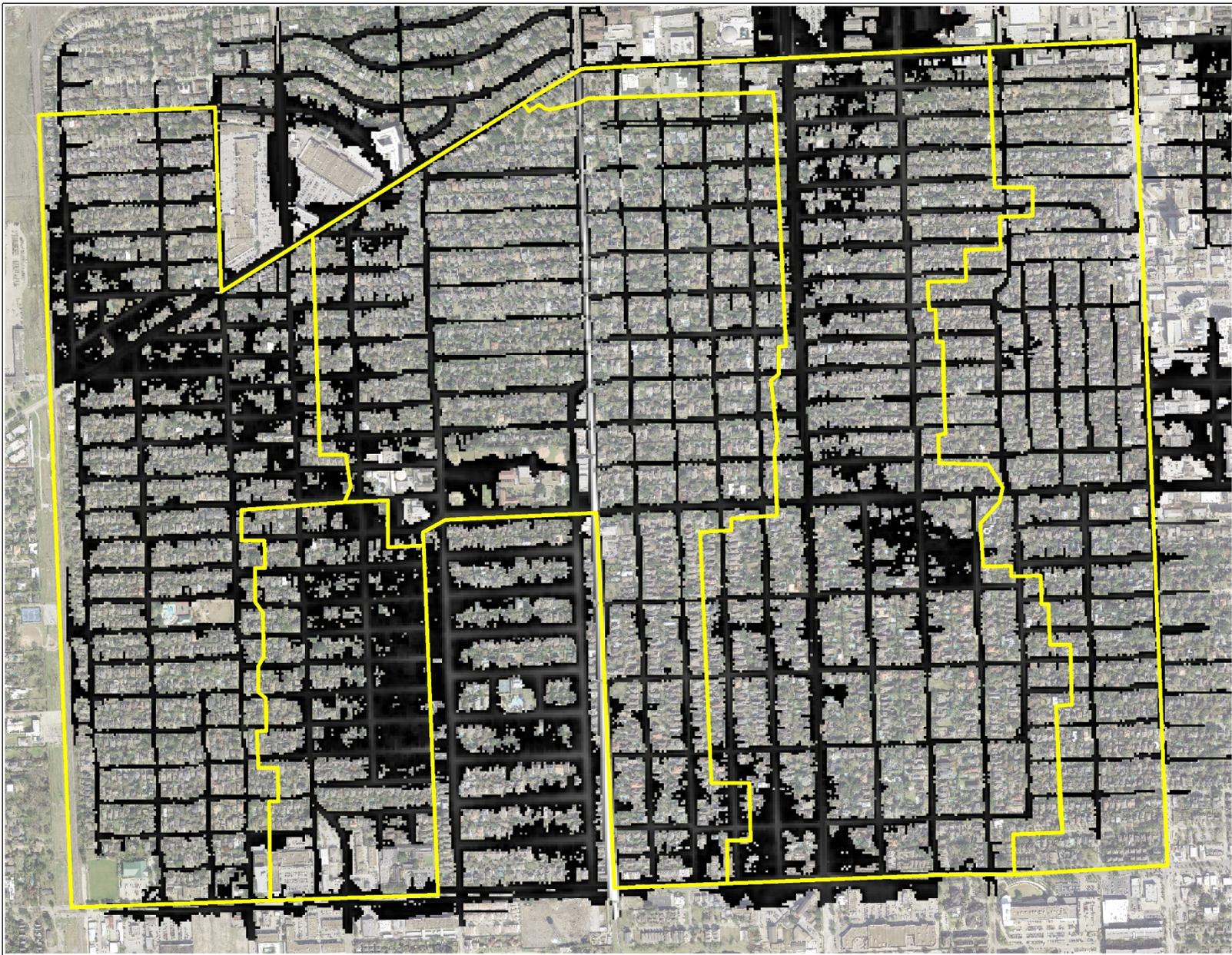


Legend

Existing 50-Year Scenario

Value
High : 9.7 FT.
Low : 0

Existing 50-Year Event
Inundation Map



N



Legend

100-Year Existing Scenario

Value

High : 12.5 FT.

Low : 0

Existing 100-Year Event
Inundation Map

Existing Conditions

Flooding Conditions 100-Year Vs Harvey Reported Structure Flooding



Legend

- FEMA Claims (Hurricane Harvey)
- Reported Flooding by West U.
- Elevation Certificates

Existing 100-Year Scenario



Ground Elev.: 55.2 ft
F.F. Elev.: 55.9 ft
WSEL: 55.7 ft

Ground Elev.: 49.0 ft
F.F. Elev.: 49.8 ft
WSEL: 49.4 ft

Existing 100-Year Event
Inundation Map

Flooded Homes

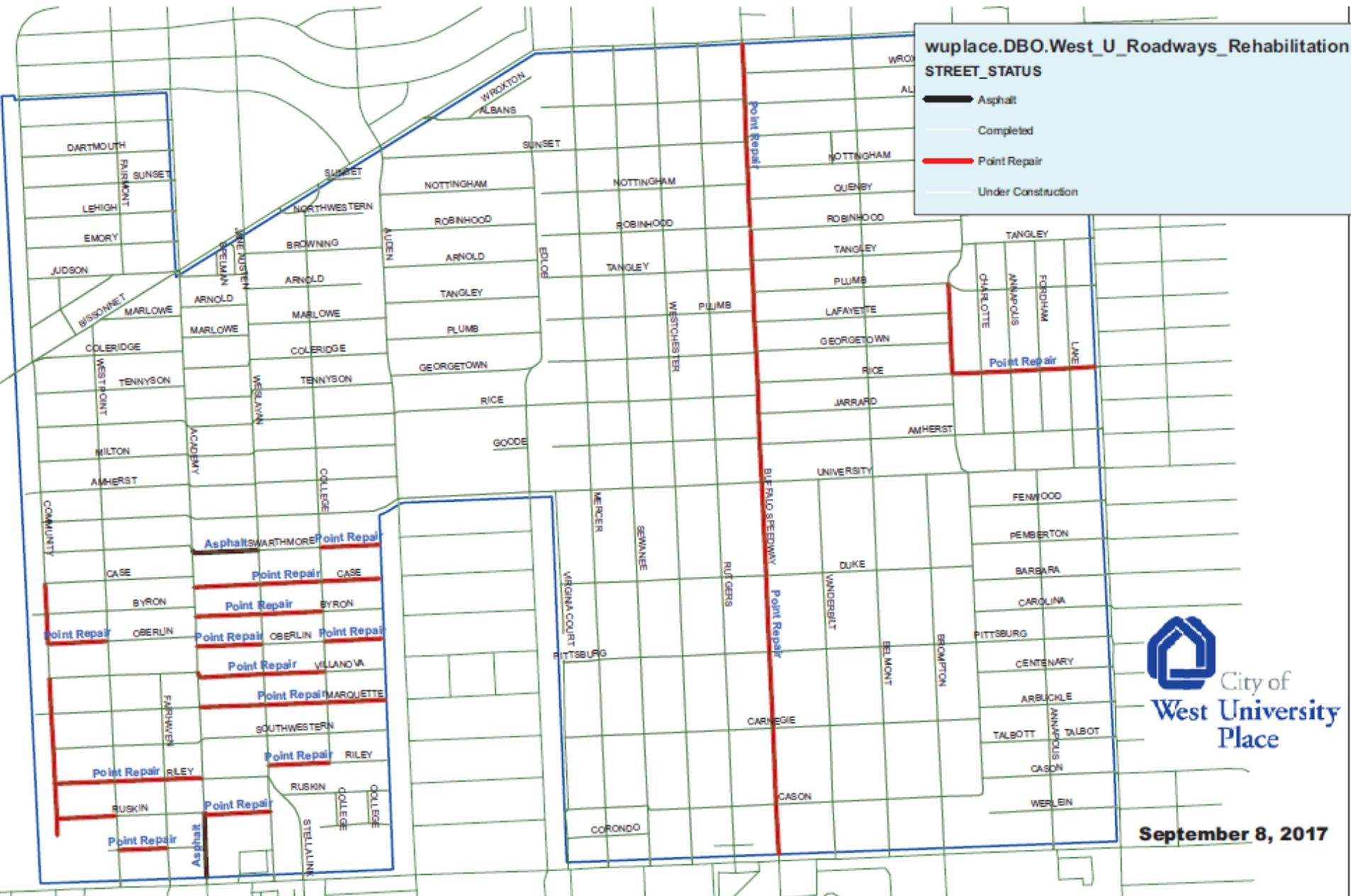
WSEL = Water Surface Elevation

Proposed Conditions

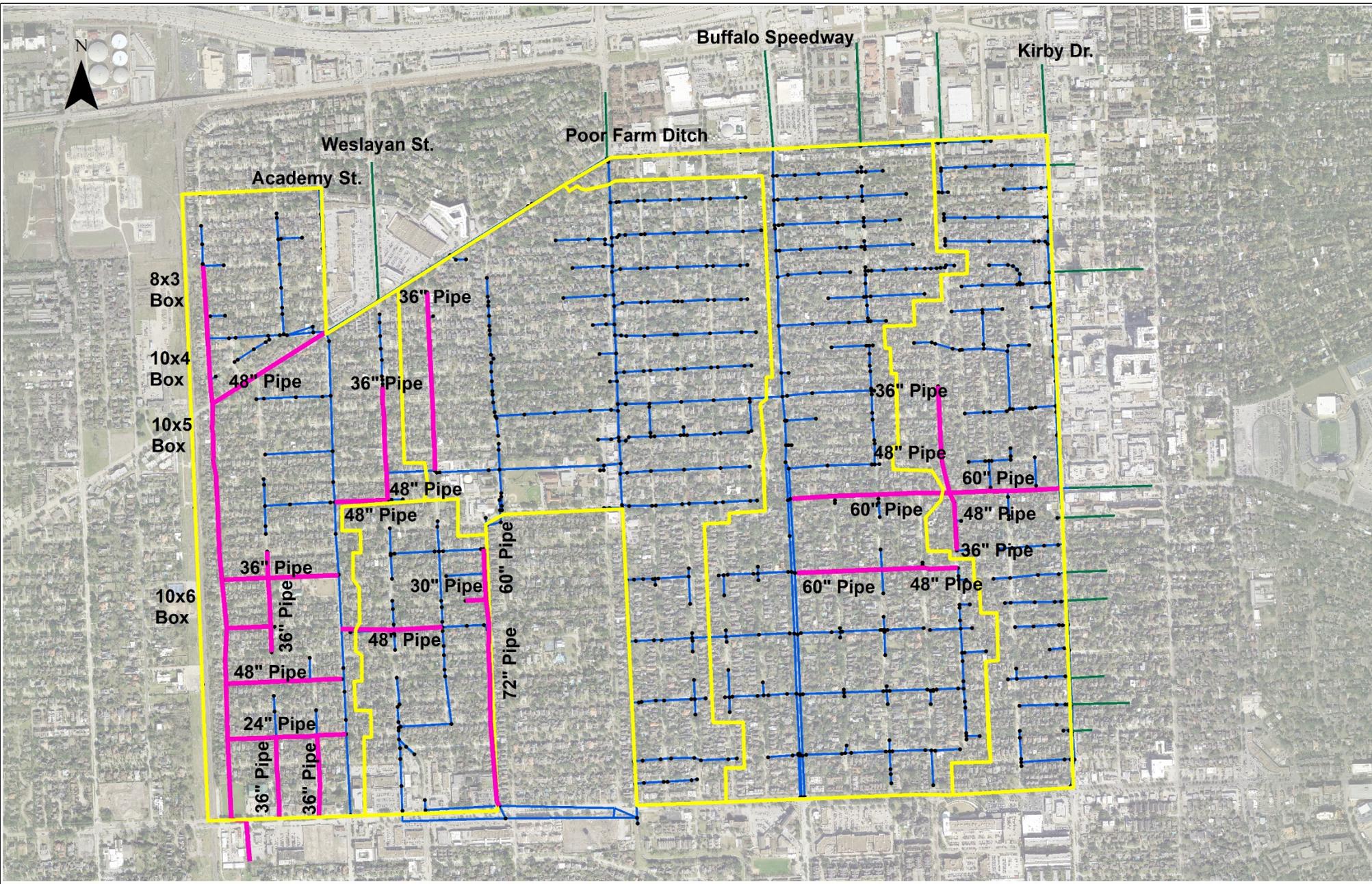
Flooding Conditions Comparison
Existing Vs Proposed

Without Restrictor

Road Reconstruction



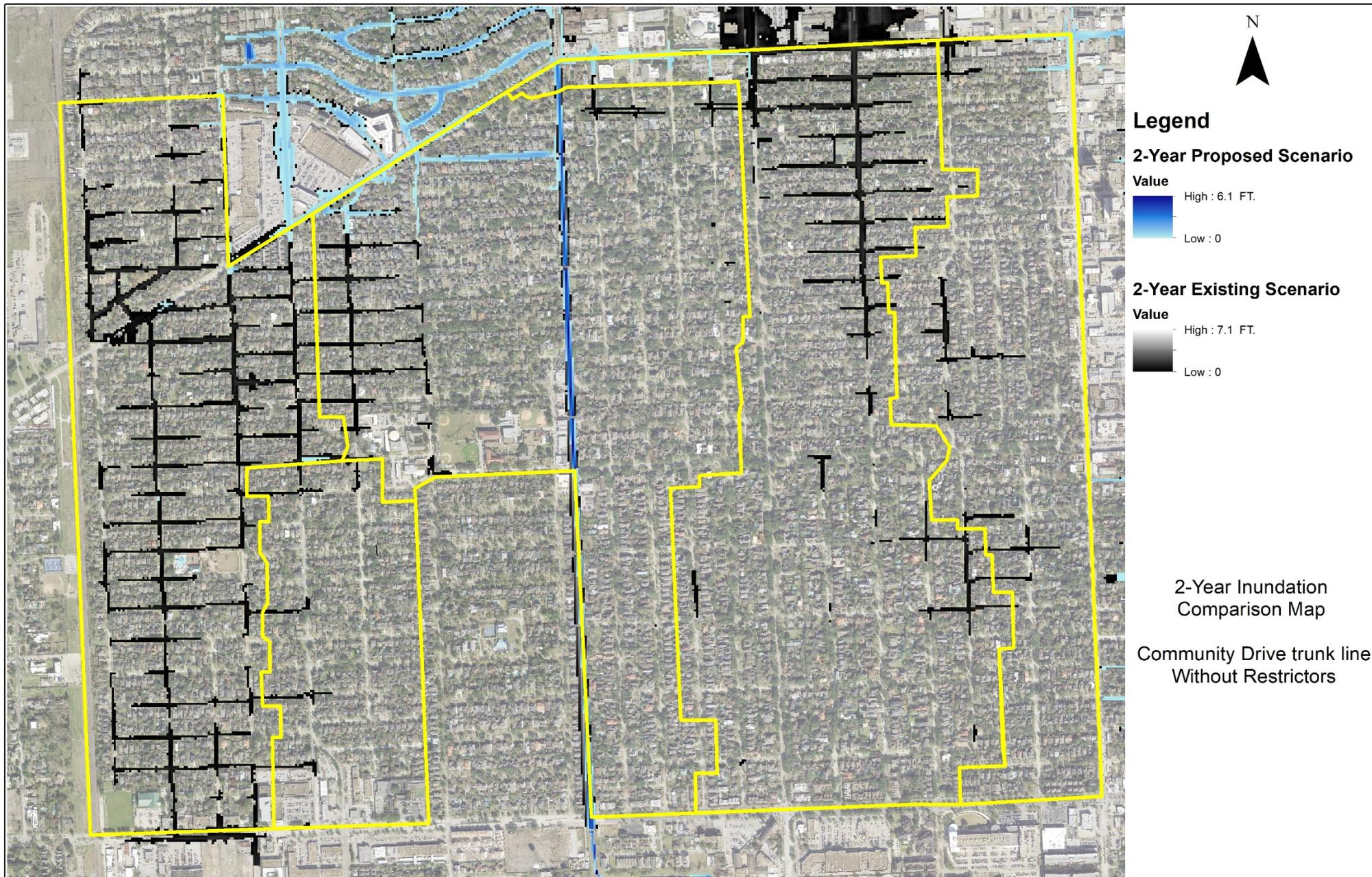
* Work includes road and storm sewer replacement needed within the next 5 years.



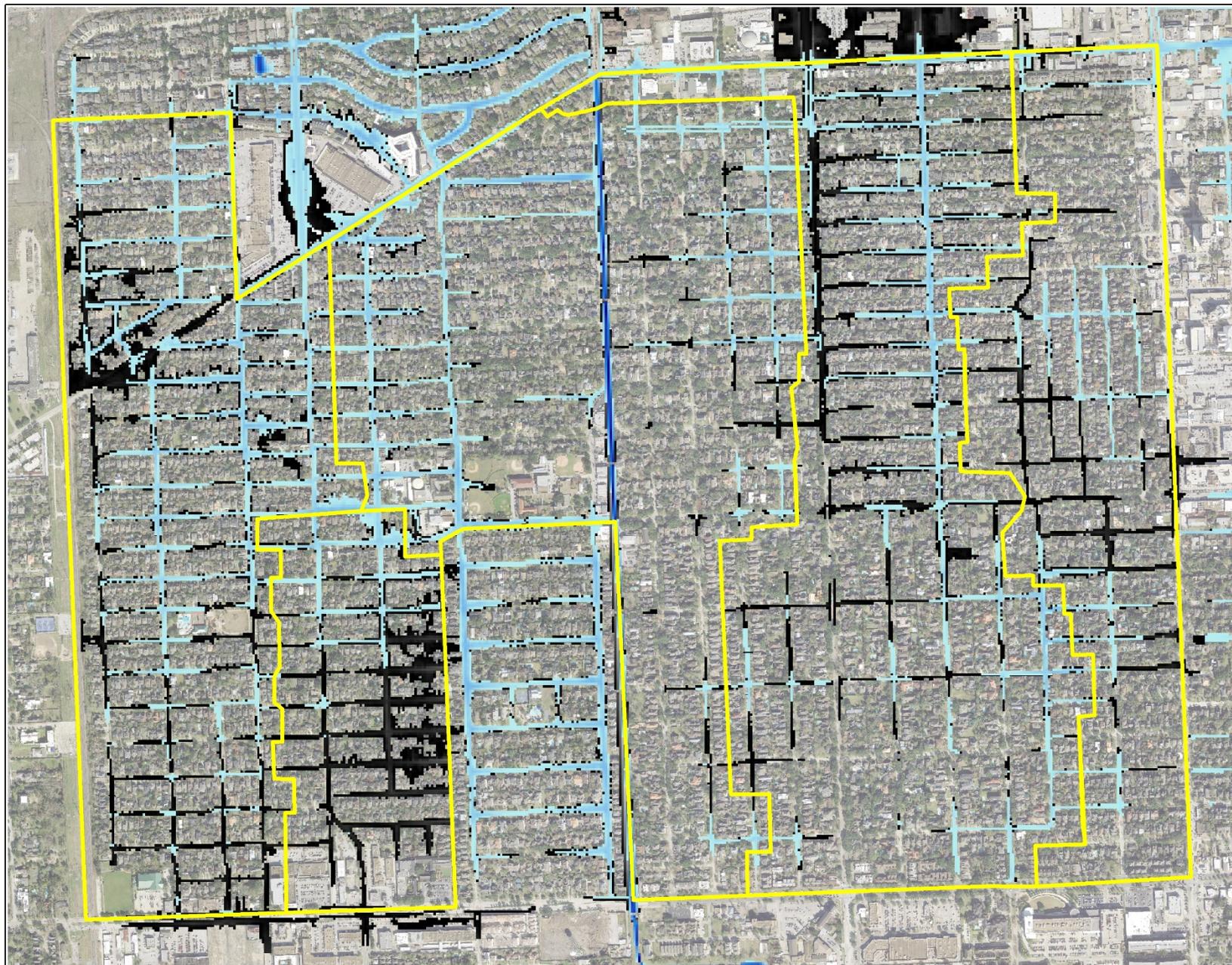
Estimate
\$60M*

* Estimated cost for drainage upgrades and associated road replacement for sections as shown

Along Community Drive and shared line at city limit



Note
 Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions



Legend

10-Year Proposed Scenario

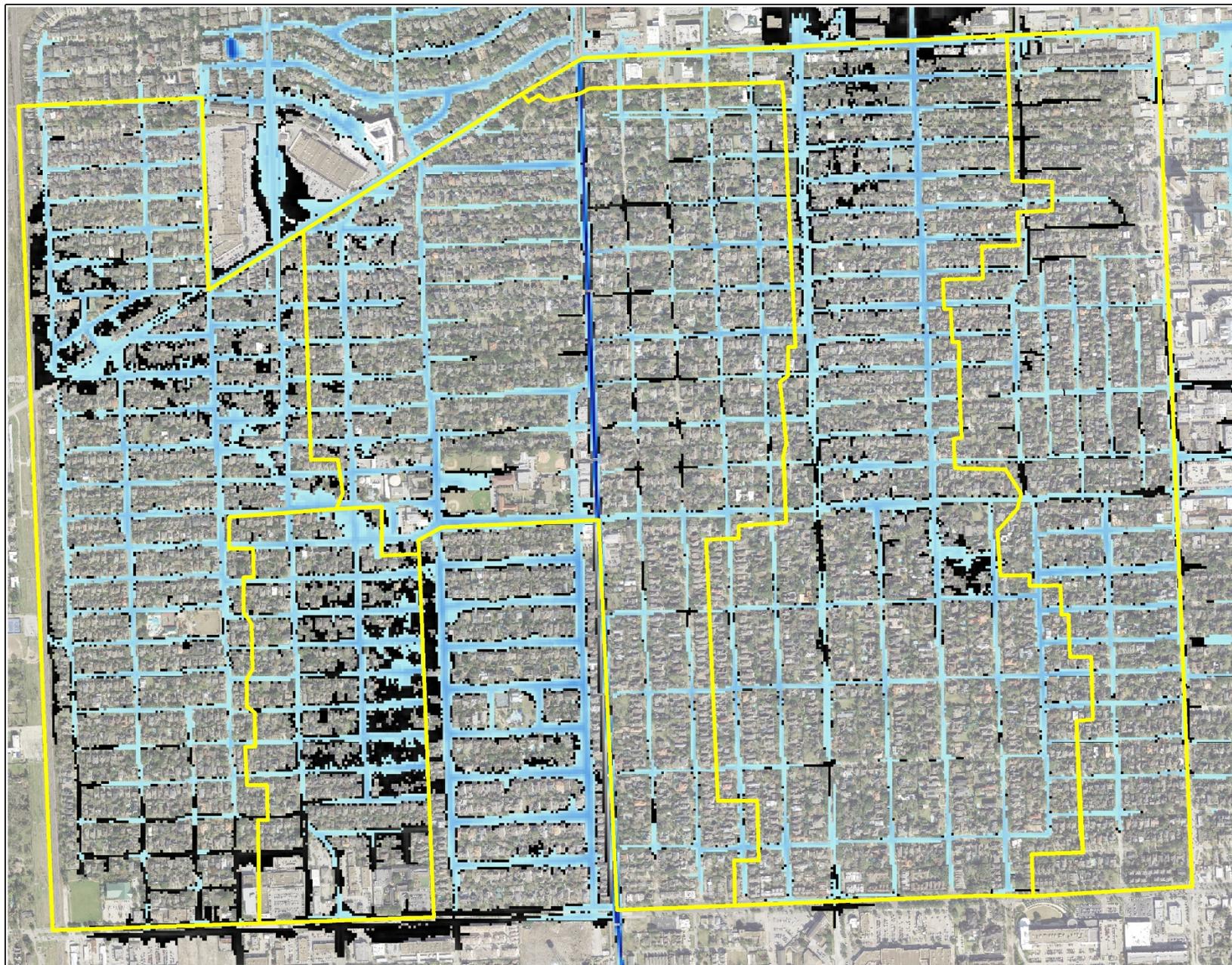
Value
 High : 9.3 FT.
 Low : 0

10-Year Existing Scenario

Value
 High : 8.5 Ft.
 Low : 0

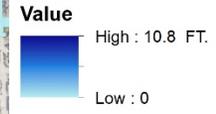
10-Year Inundation Comparison Map
 Community Drive trunk line Without Restrictor

Note
 Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions

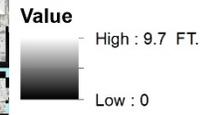


Legend

50-Year Proposed Scenario



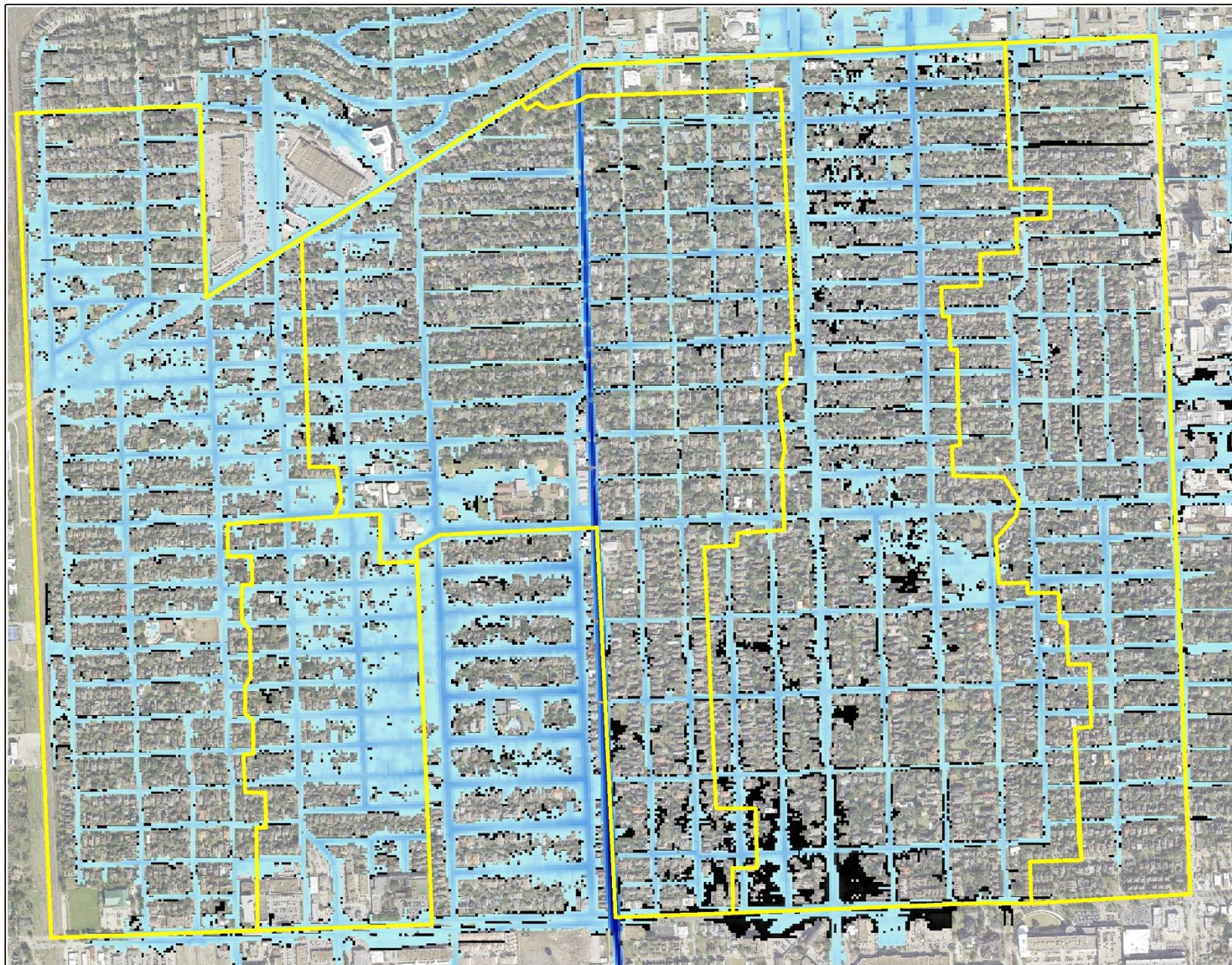
50-Year Existing Scenario



50-Year Inundation Comparison Map
Community Drive trunk line Without Restrictor

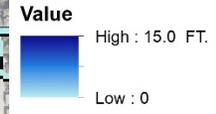
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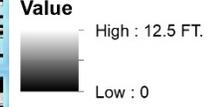


Legend

Proposed 100-Year Scenario



Existing 100-Year Scenario



100-Year Inundation Comparison Map
Community Drive trunk line Without Restrictor



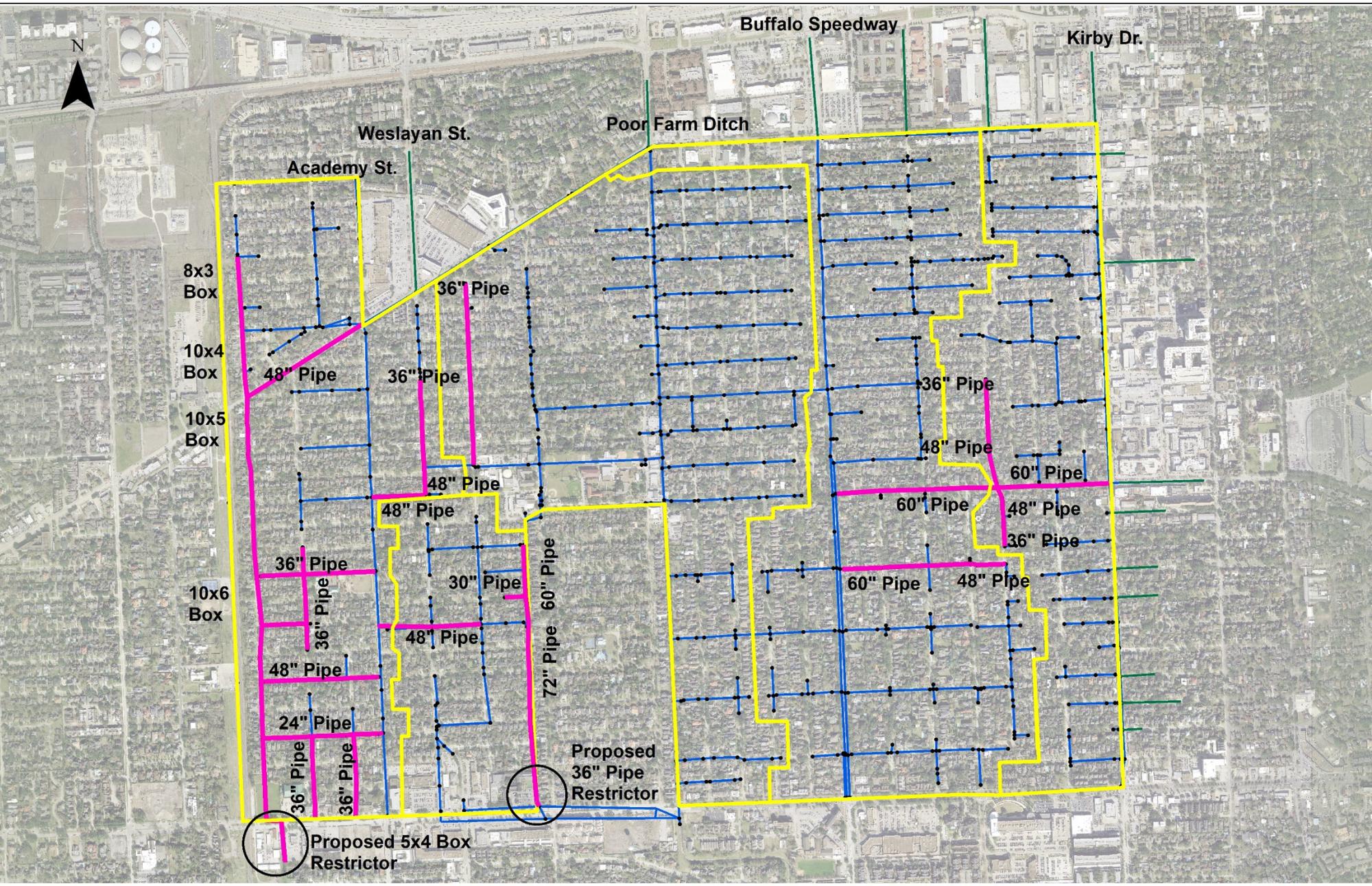
Note

Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions

Proposed Conditions

Flooding Conditions Comparison
Existing Vs Proposed

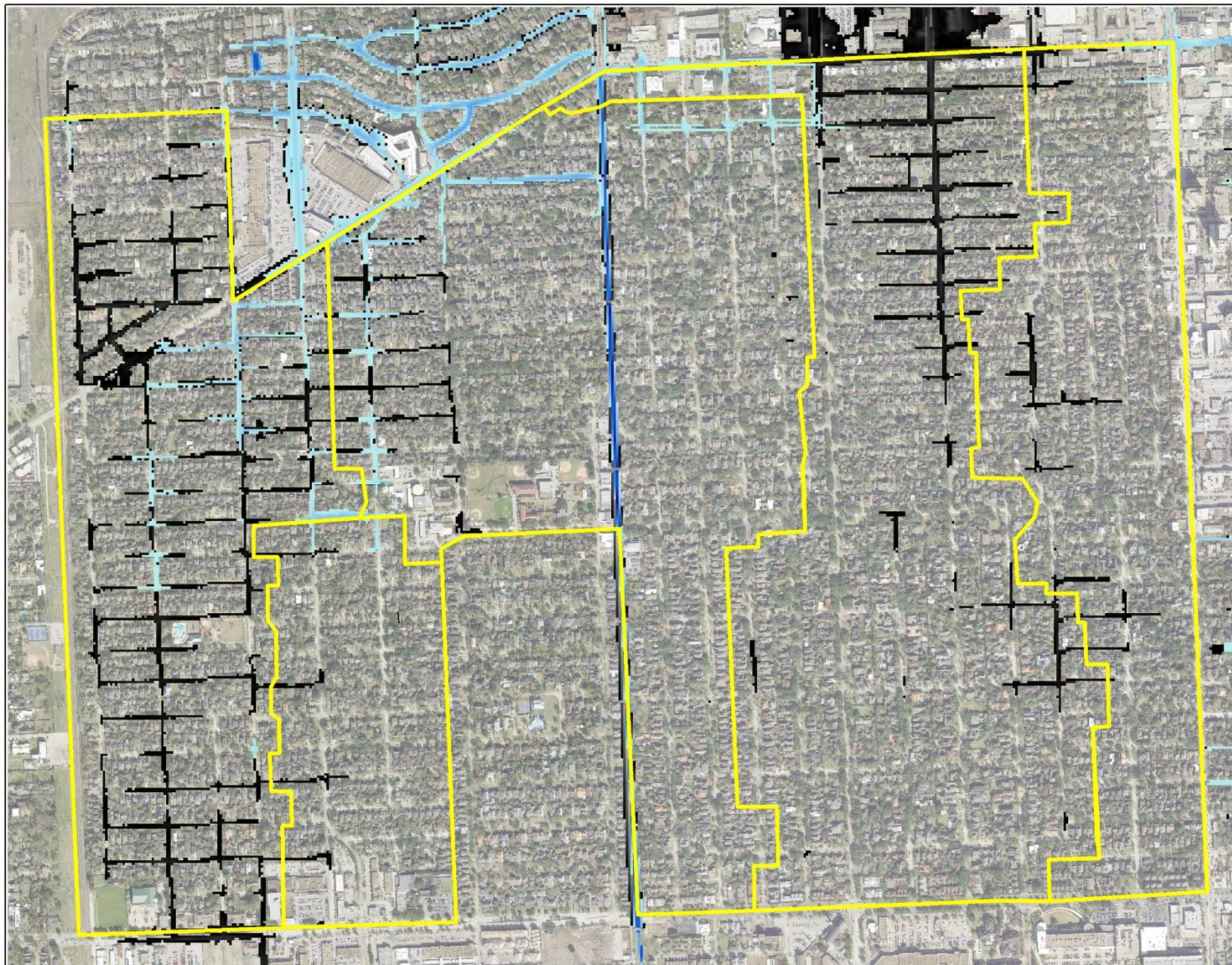
With Restrictor



Estimate
\$60M*

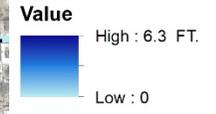
* Estimated cost for drainage upgrades and associated road replacement for sections as shown

Along Community Drive and shared line at city limit

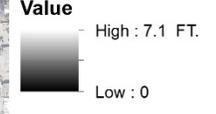


Legend

2-Year Proposed Scenario



2-Year Existing Scenario

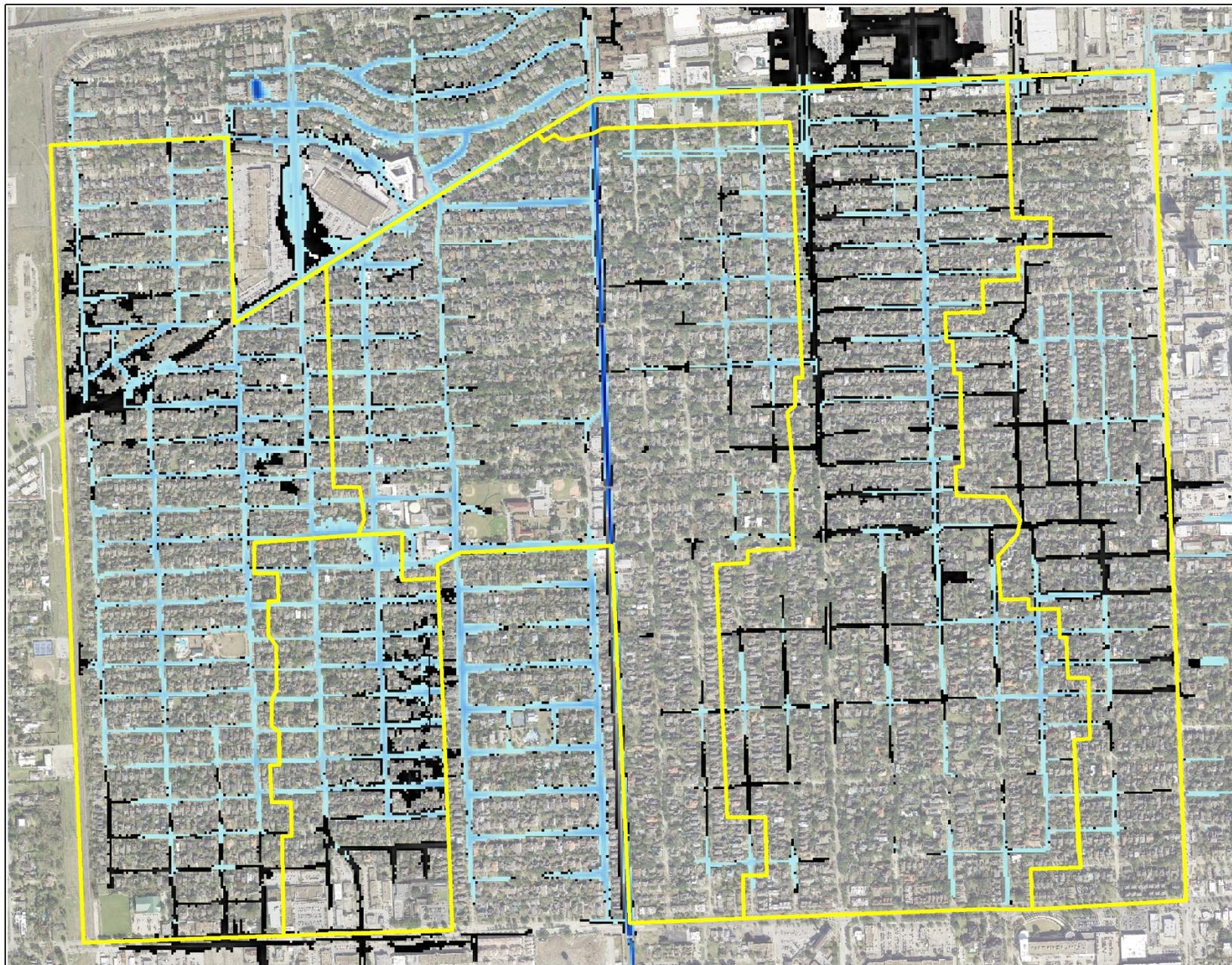


2-Year Inundation Comparison Map

Community Drive trunk line with restrictors

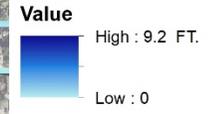
Note

Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions

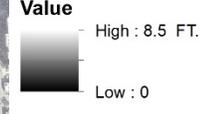


Legend

10-Year Proposed Scenario



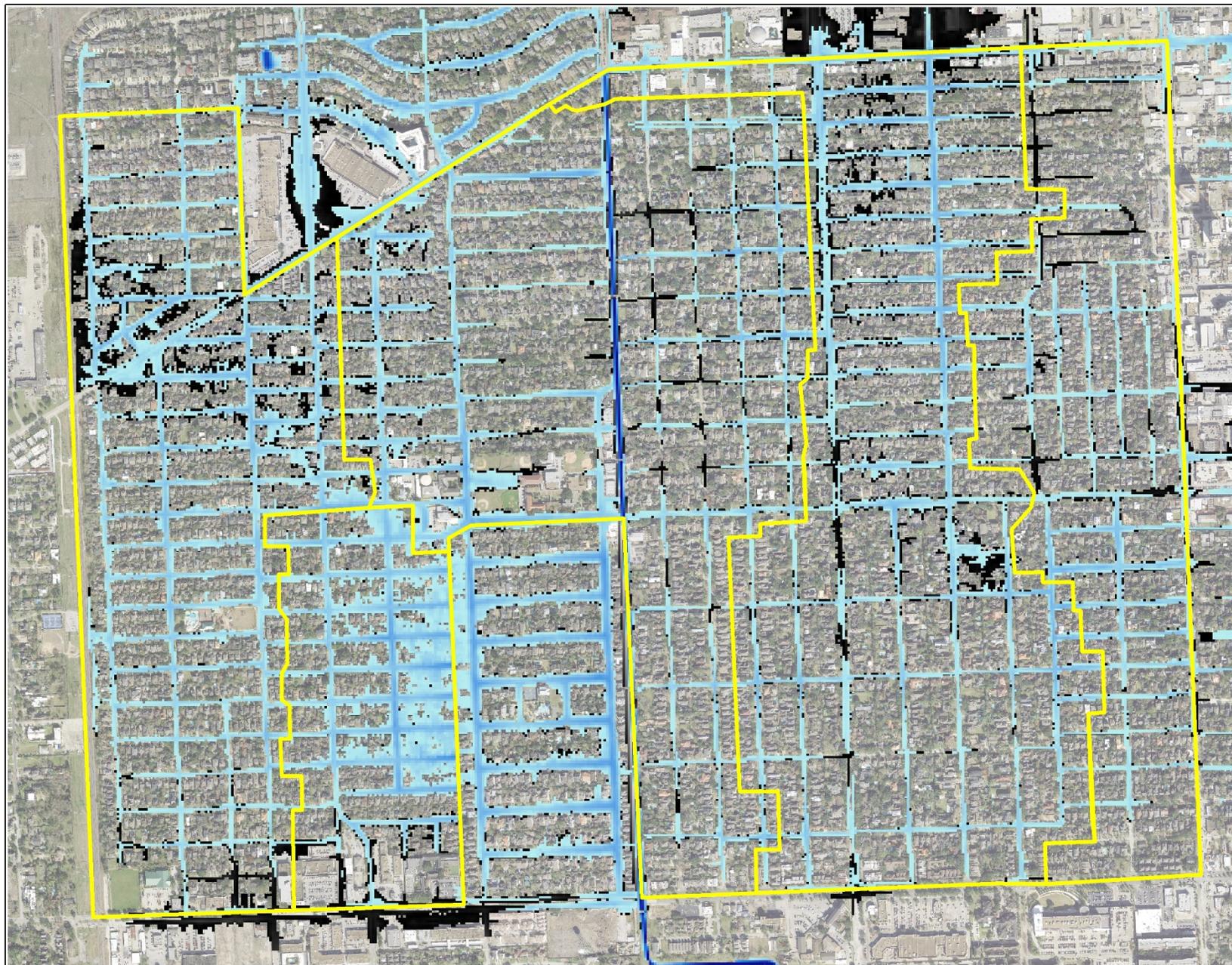
10-Year Existing Scenario



10-Year Inundation Comparison Map
Community Drive trunk line with restrictors

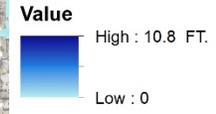
Note

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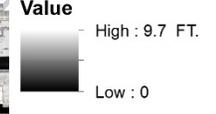


Legend

50-Year Proposed Scenario



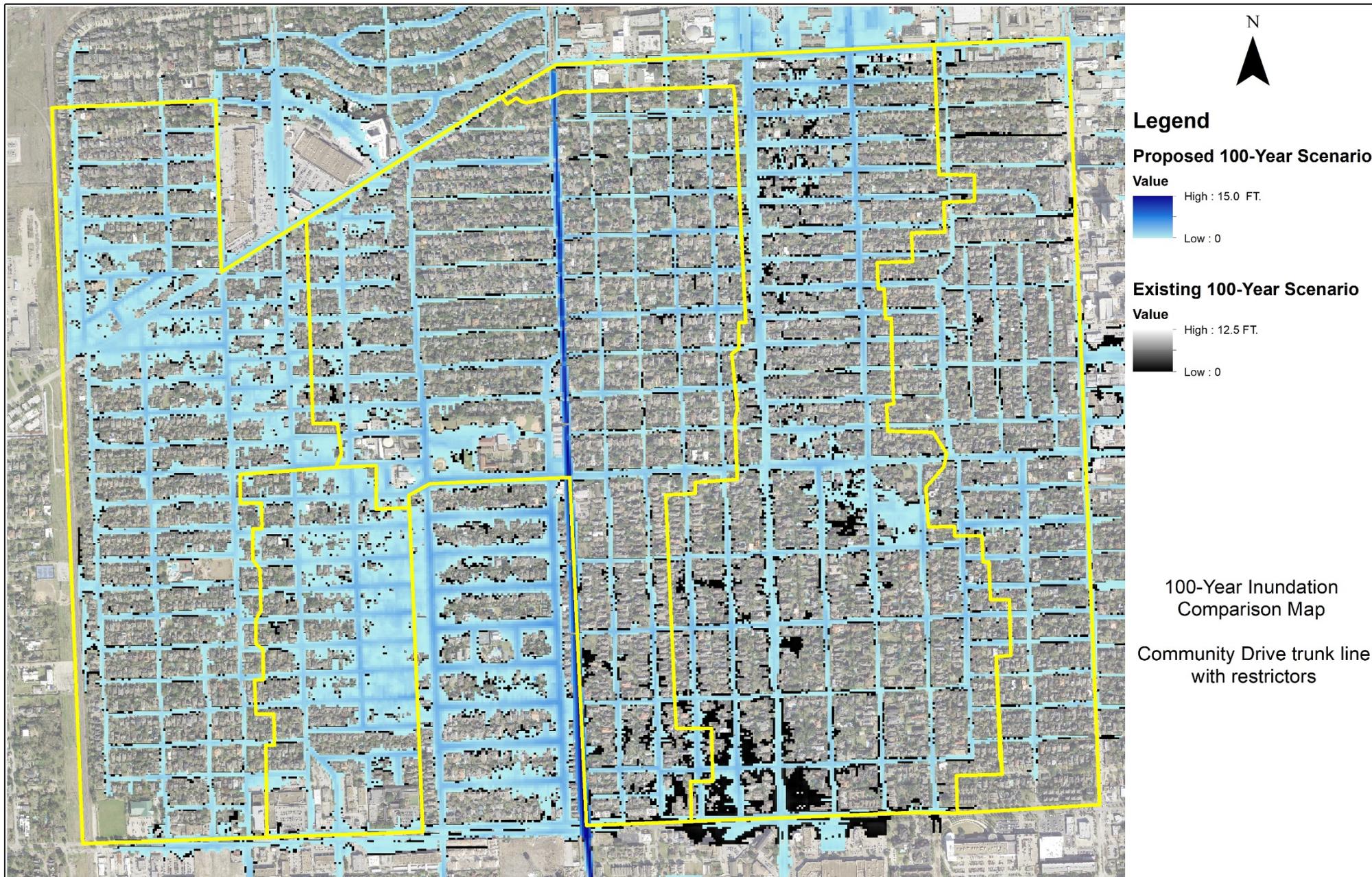
50-Year Existing Scenario



50-Year Inundation Comparison Map
Community Drive trunk line with restrictor

Note

Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions



Legend

Proposed 100-Year Scenario

Value
 High : 15.0 FT.
 Low : 0

Existing 100-Year Scenario

Value
 High : 12.5 FT.
 Low : 0

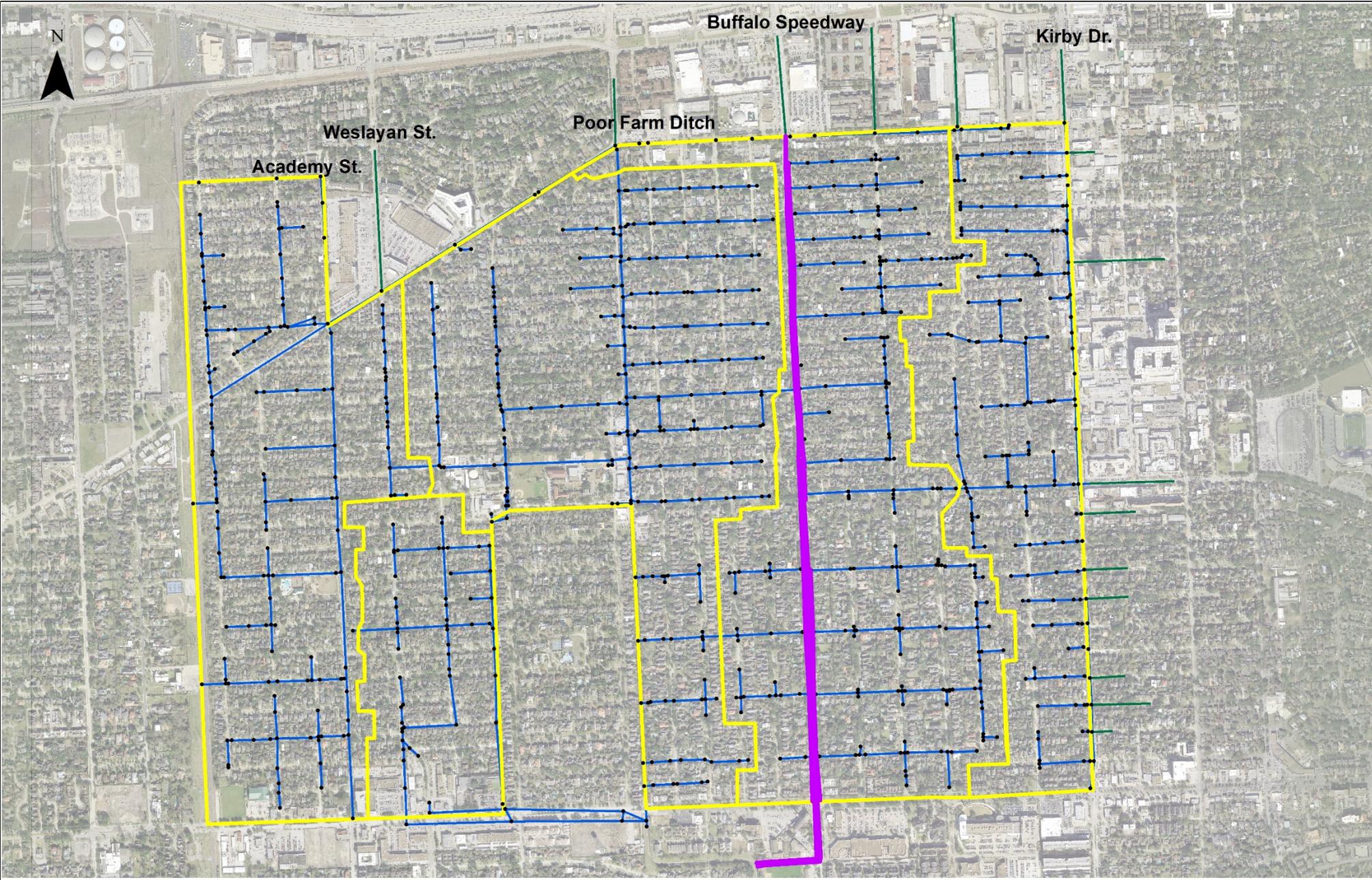
100-Year Inundation Comparison Map

Community Drive trunk line with restrictors

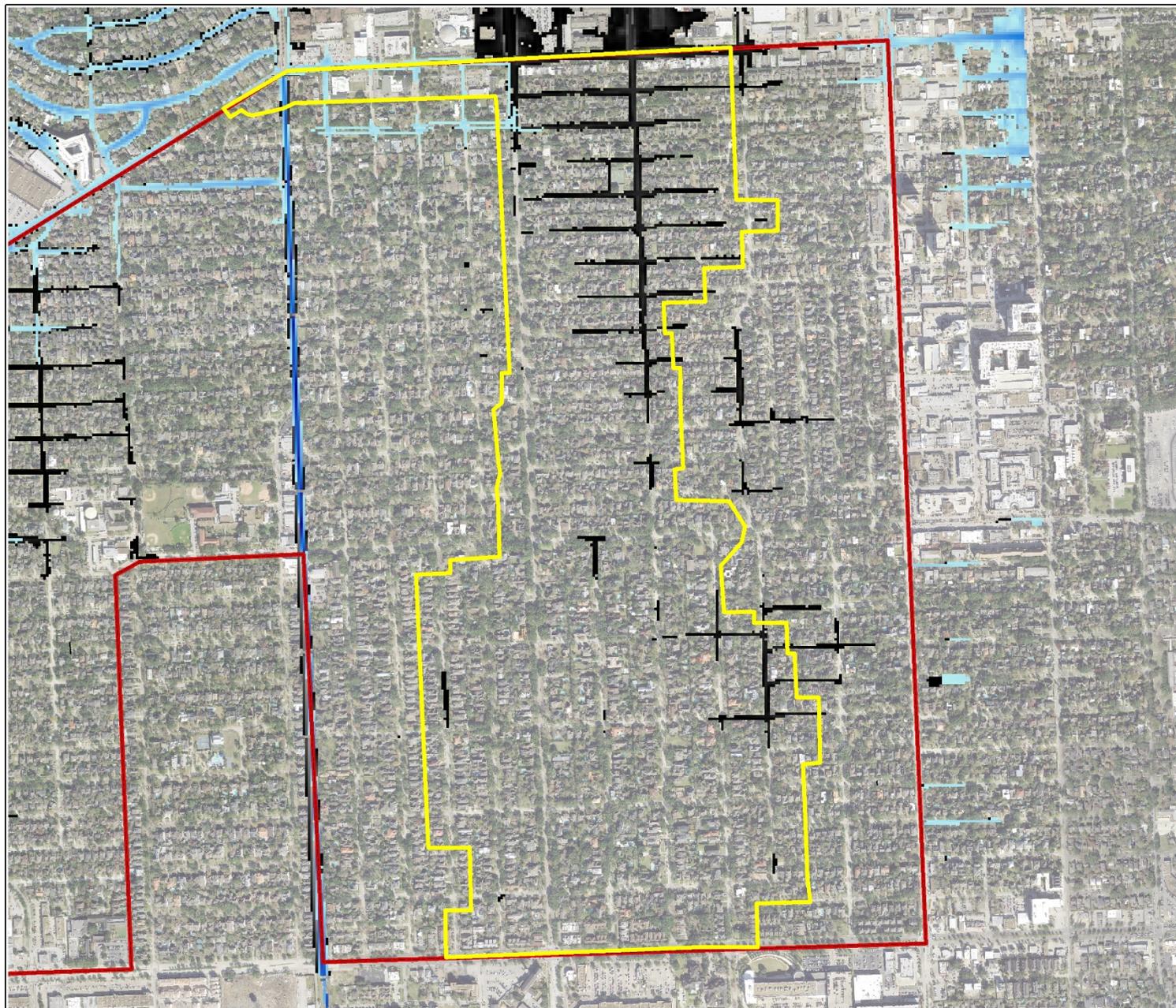
Note

Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions

Buffalo Speedway Improvement



Buffalo Speedway
Improvements



Legend

 Buffalo Speedway Drainage Area

2-Year Buffalo Spdwy Imp.

Value

 High : 6.2575

Low : 0

2-Year Existing Scenario

Value

 High : 7.1 FT.

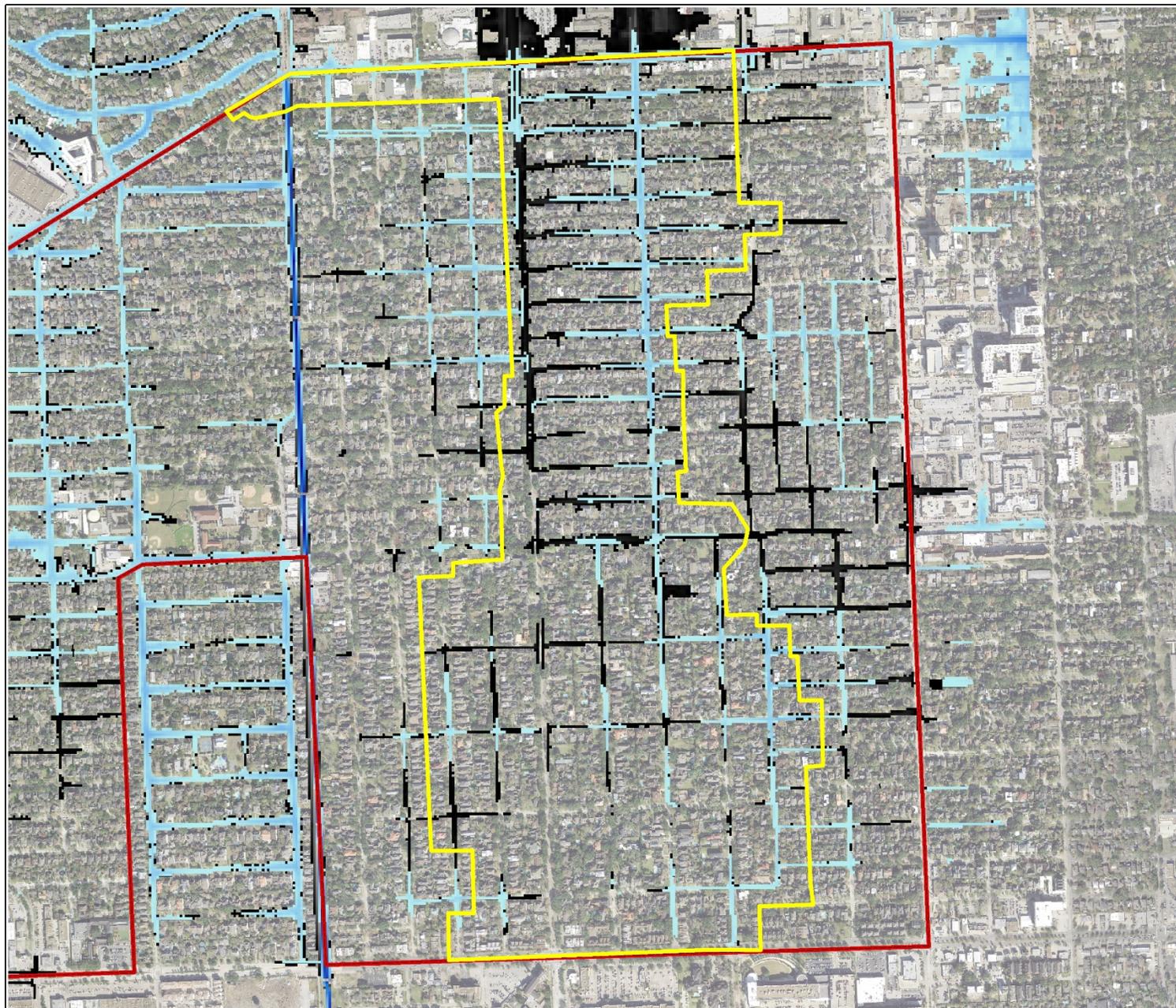
Low : 0

2-Year Inundation
Comparison Map

Buffalo Speedway
Improvements

Note

Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions



Legend

 Buffalo Speedway Drainage Area

10-Year Buffalo Spdw Imp.

Value
 High : 9.2689
 Low : 0

10-Year Existing Scenario

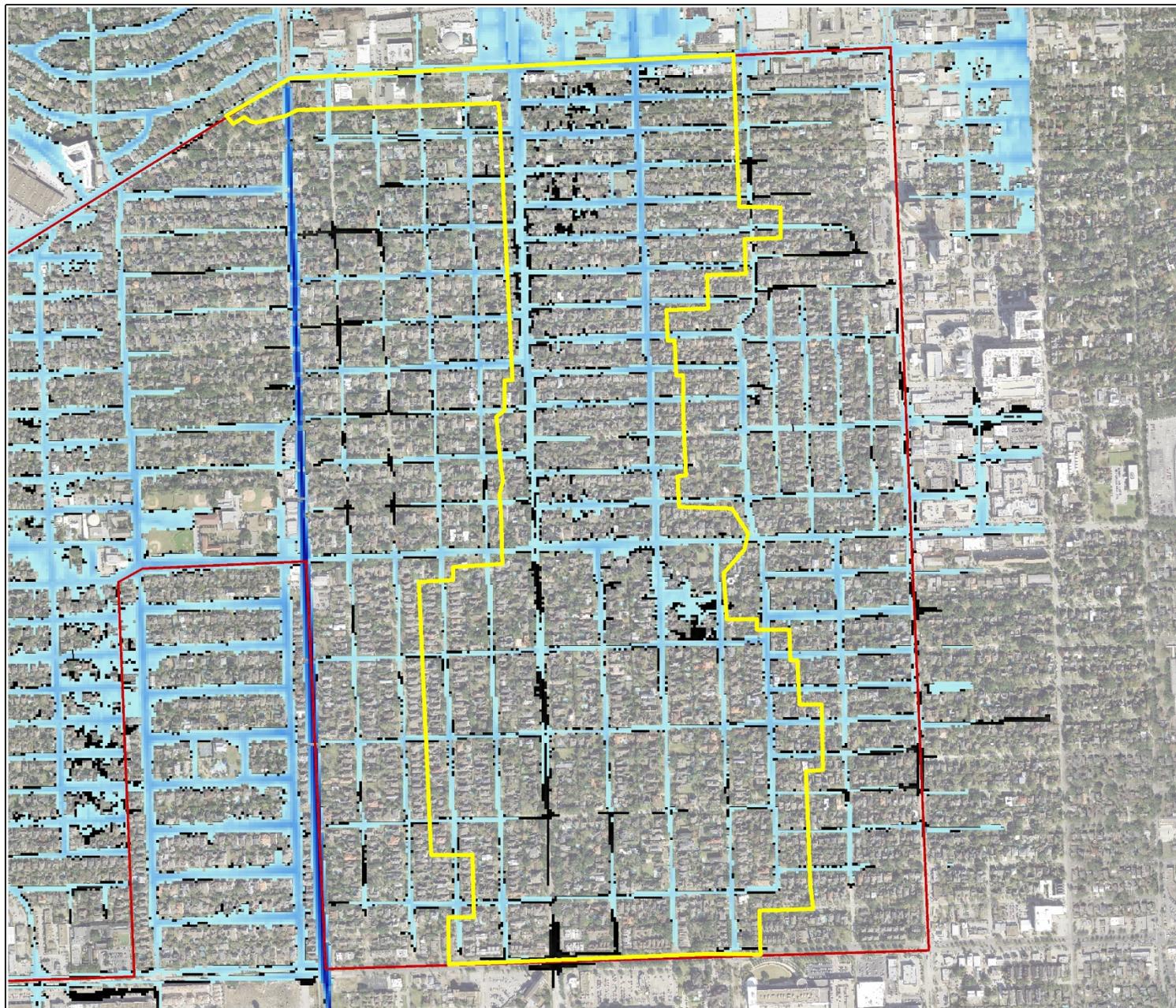
Value
 High : 8.5 FT.
 Low : 0

10-Year Inundation Comparison Map

Buffalo Speedway Improvements

Note

Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions



Legend

 Buffalo Speedway Drainage Area

50-Year Buffalo Spdwy Imp.

Value

 High : 11.5 FT.

 Low : 0

50-Year Existing Scenario

Value

 High : 9.7 FT.

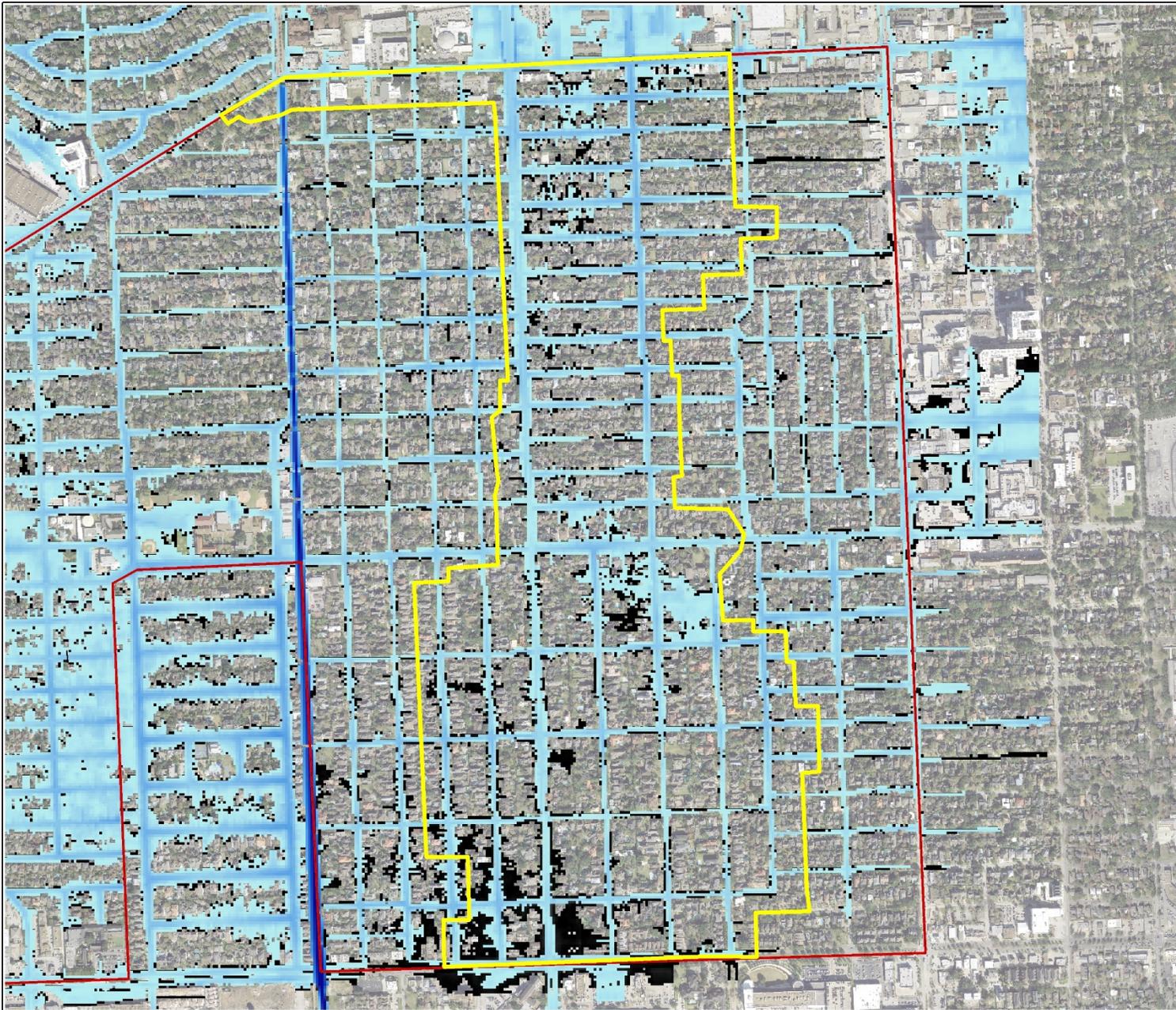
 Low : 0

50-Year Inundation Comparison Map

Buffalo Speedway Improvements

Note

Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions



Legend

 Buffalo Speedway Drainage Area

100-Year Buffalo Spdwy Imp.

Value
 High : 15.0 FT.
 Low : 0

Existing 100-Year Scenario

Value
 High : 12.5 FT.
 Low : 0

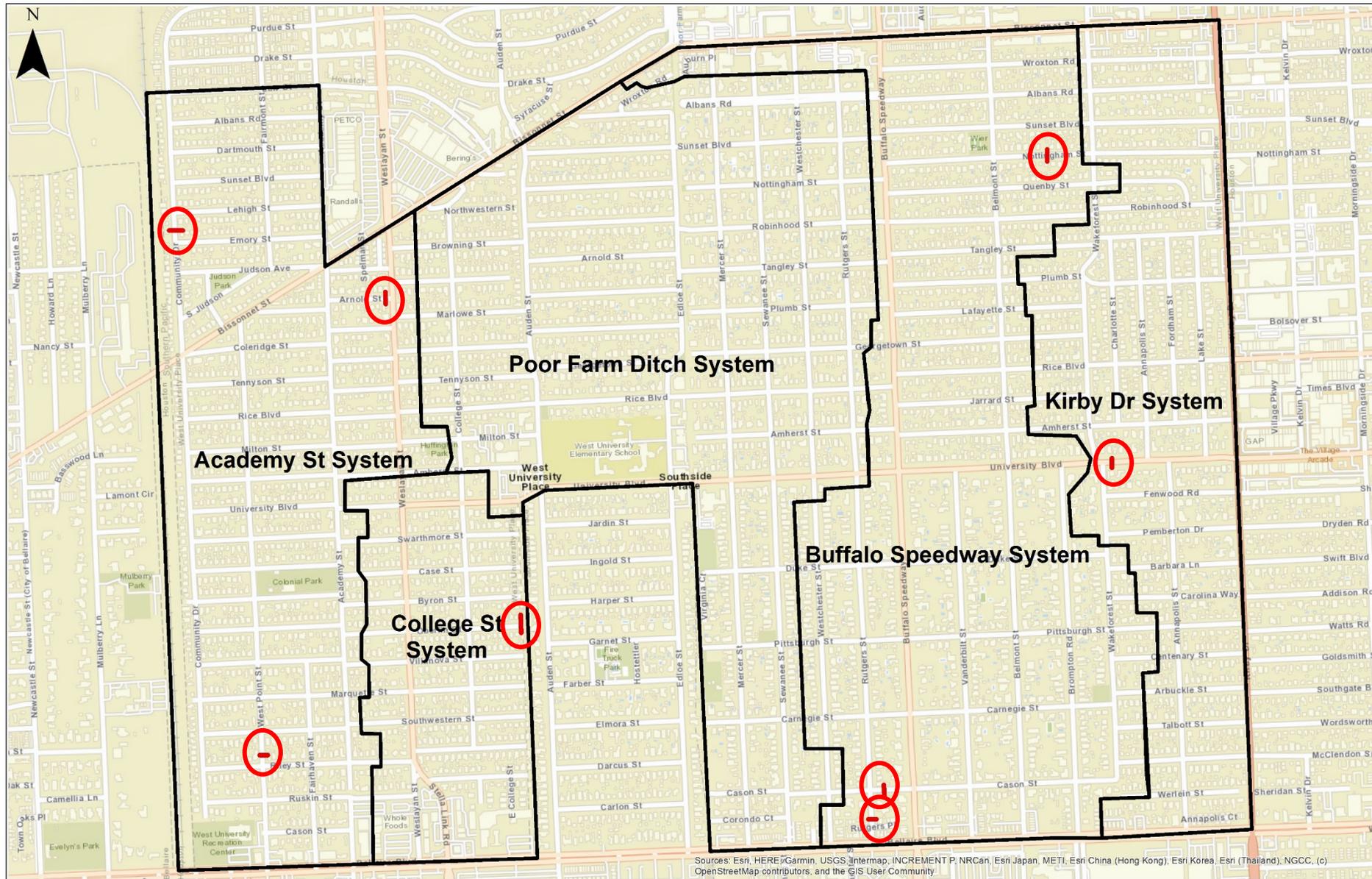
100-Year Inundation Comparison Map

Buffalo Speedway Improvements

Note

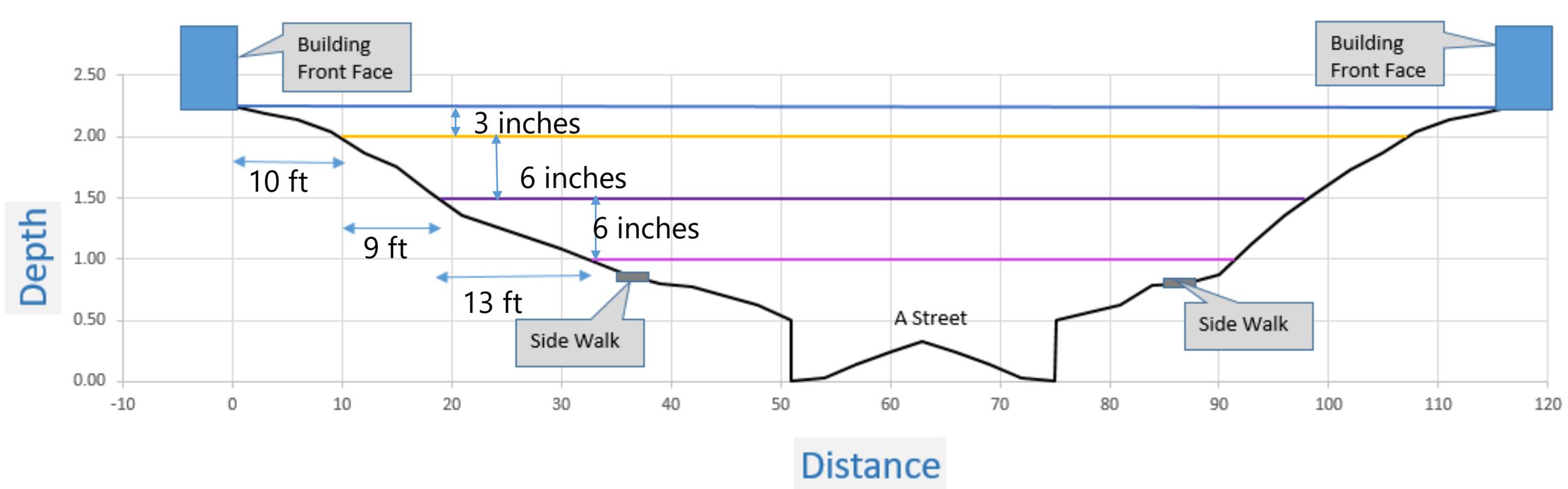
Appearance of Black hatch in the proposed conditions indicates the improvement to the flooding conditions

Water Surface Comparison at Selected Locations



Locations of Cross Sections

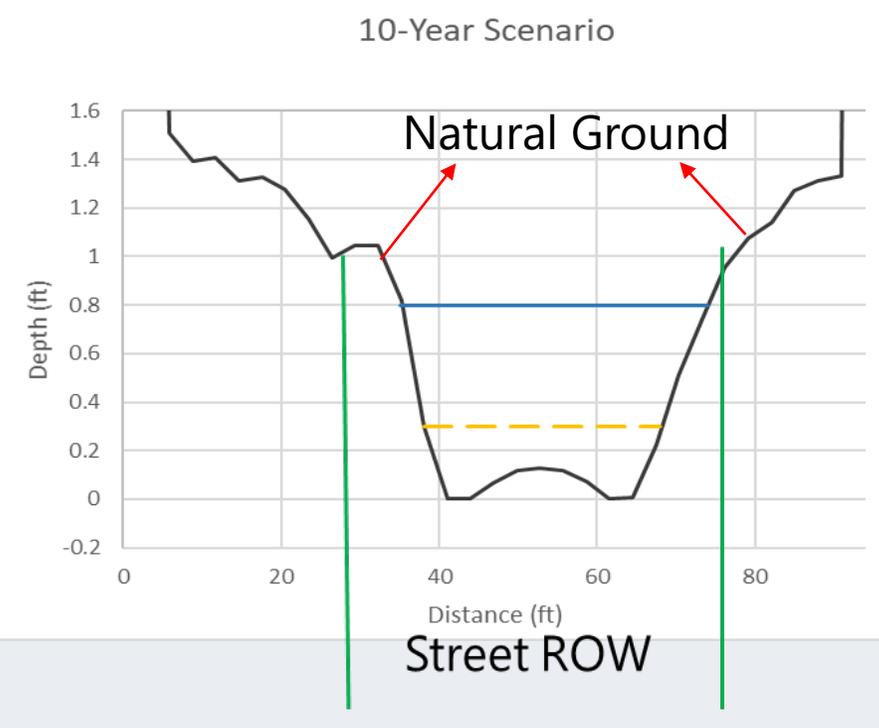
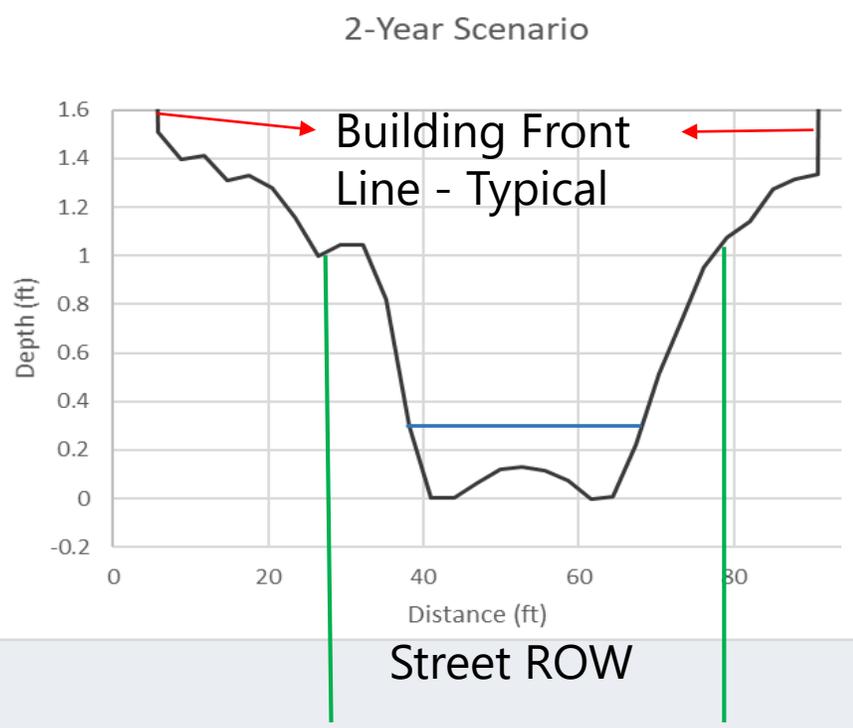
Typical WSEL Drop Vs Horizontal Shift



- At the critical elevation (near door step), the shift is more than the average shift (est.10 ft. for 3 inches drop)
- This is a typical section, not relevant to any storm event – only the relationship based on the slope
- Average shift = 6ft. per 3 inches drop.



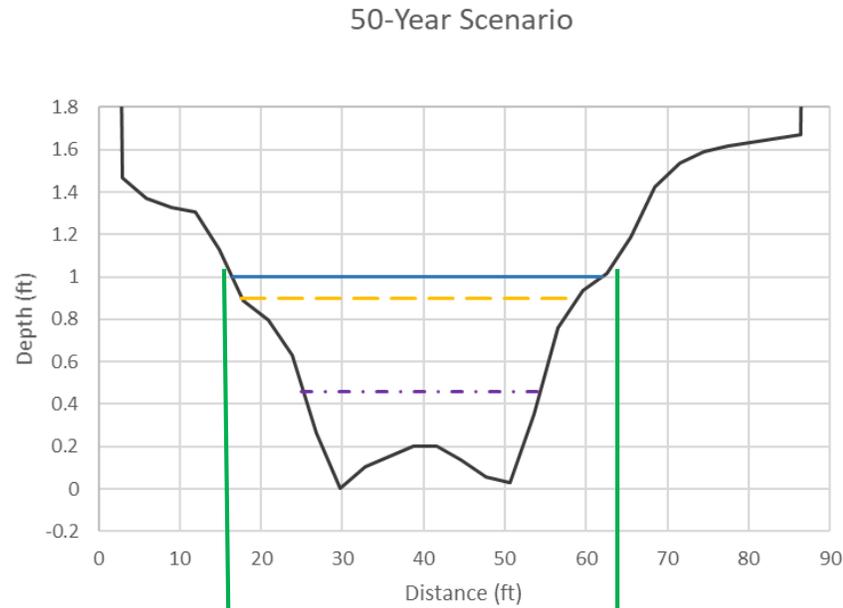
WSEL = Water Surface Elevation
 No WSEL line means the WSEL is below the street elevation



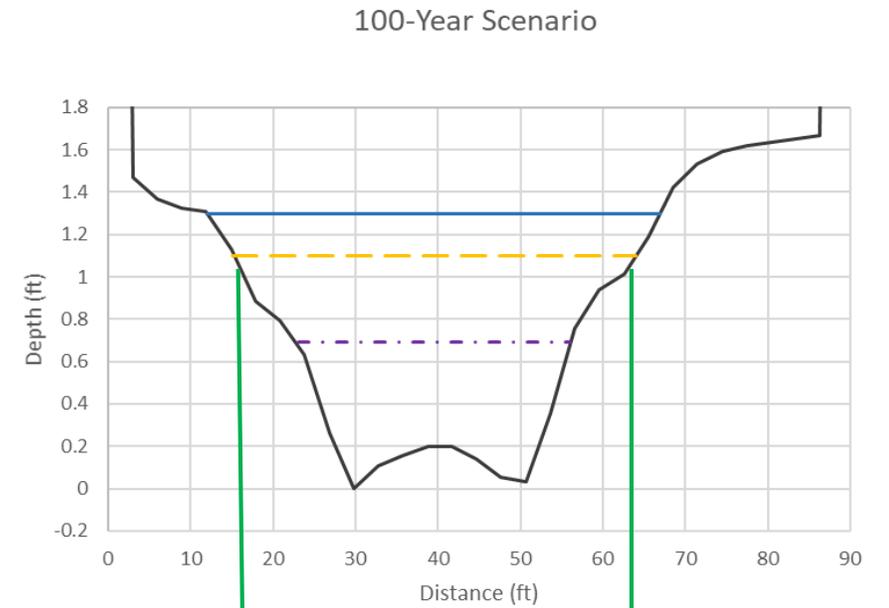
- WSEL Existing
- - - WSEL Proposed w/ Restrictor
- - - - WSEL Proposed w/o Restrictor

- **Cross Sections were taken building to building from 2018 LiDAR**
- **Vertical Line at the end indicate the face of the structure.**
- **ROW is approximate**

WSEL = Water Surface Elevation
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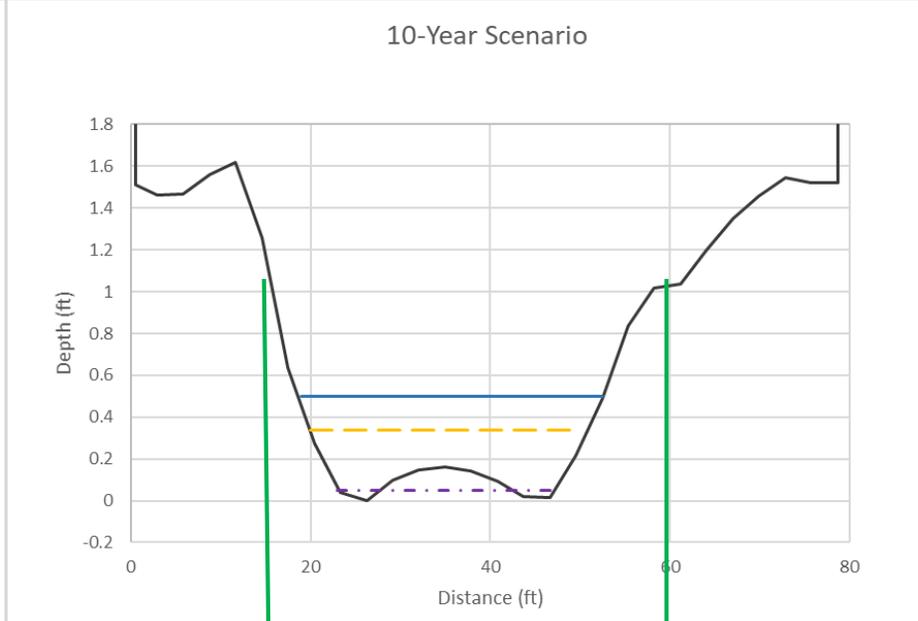
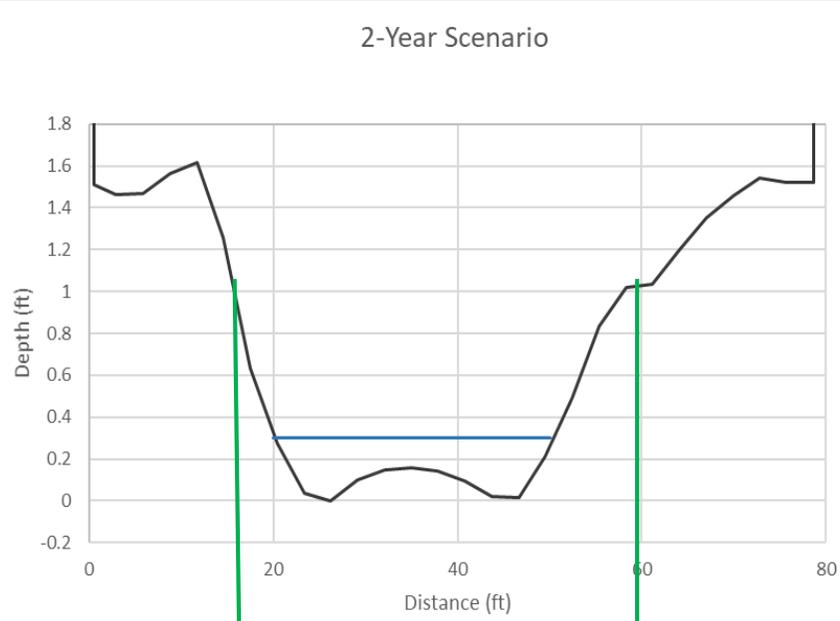
Street ROW



Street ROW

- WSEL Existing
- - - WSEL Proposed w/ Restrictor
- . . - WSEL Proposed w/o Restrictor

WSEL = Water Surface Elevation
 No WSEL line means the WSEL is below the street elevation



Street ROW

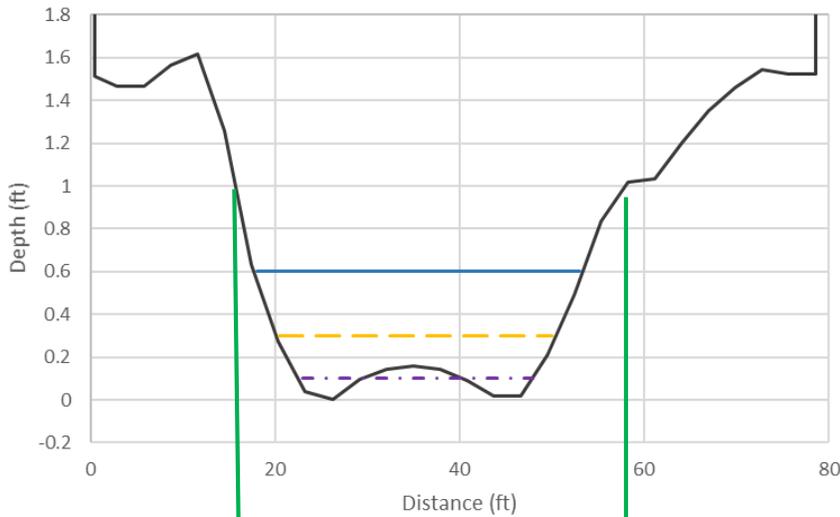
Street ROW

- WSEL Existing
- - - WSEL Proposed w/ Restrictor
- · - · - WSEL Proposed w/o Restrictor

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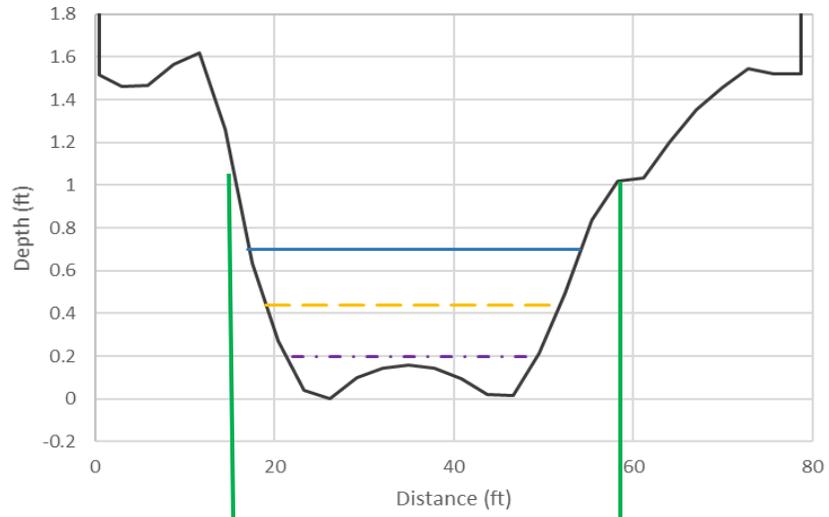


50-Year Scenario



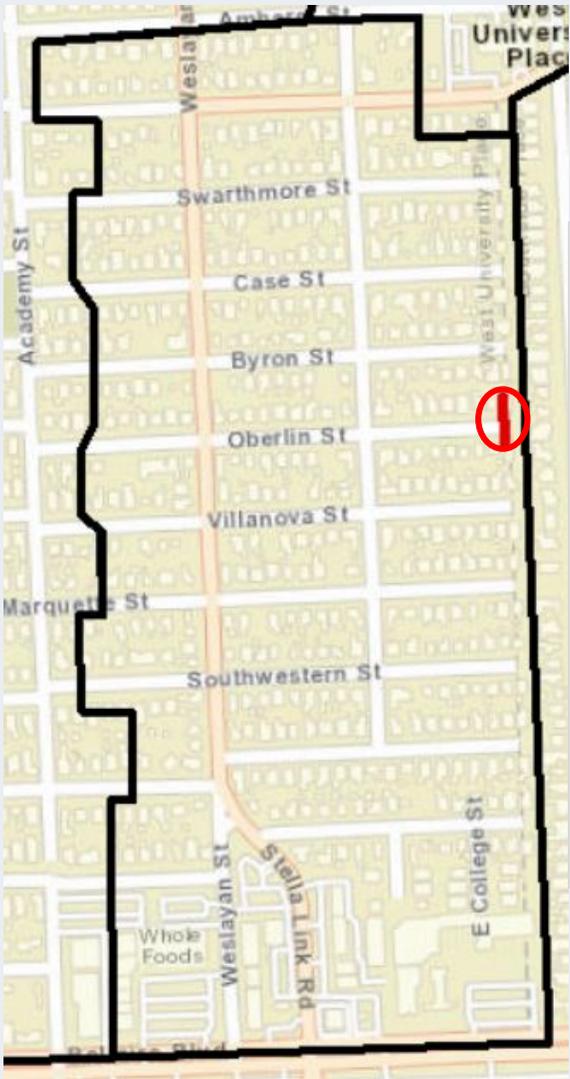
Street ROW

100-Year Scenario



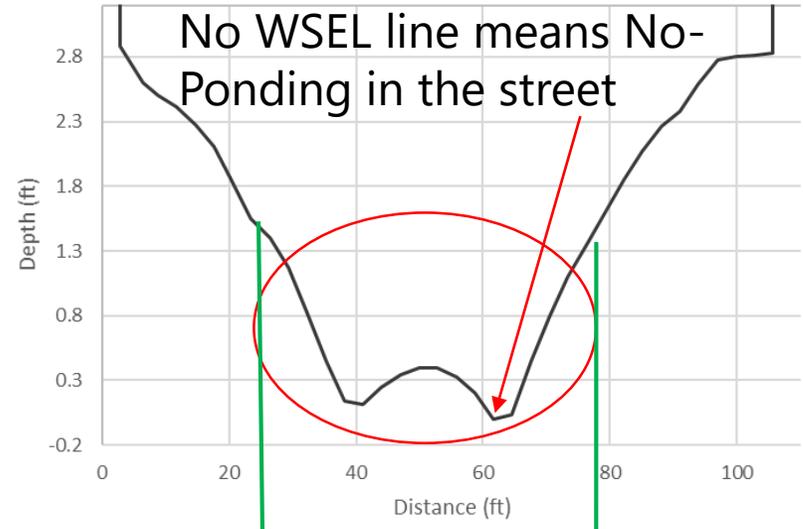
Street ROW

- WSEL Existing
- - - WSEL Proposed w/ Restrictor
- . - . WSEL Proposed w/o Restrictor



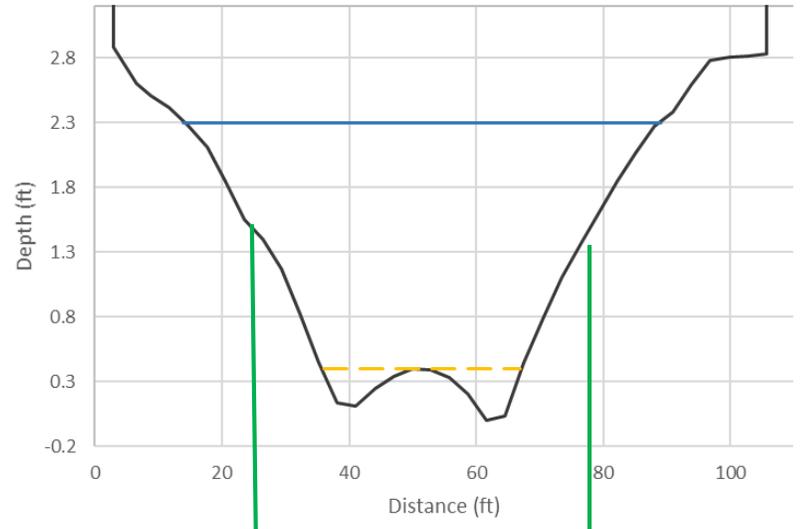
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2-Year Scenario



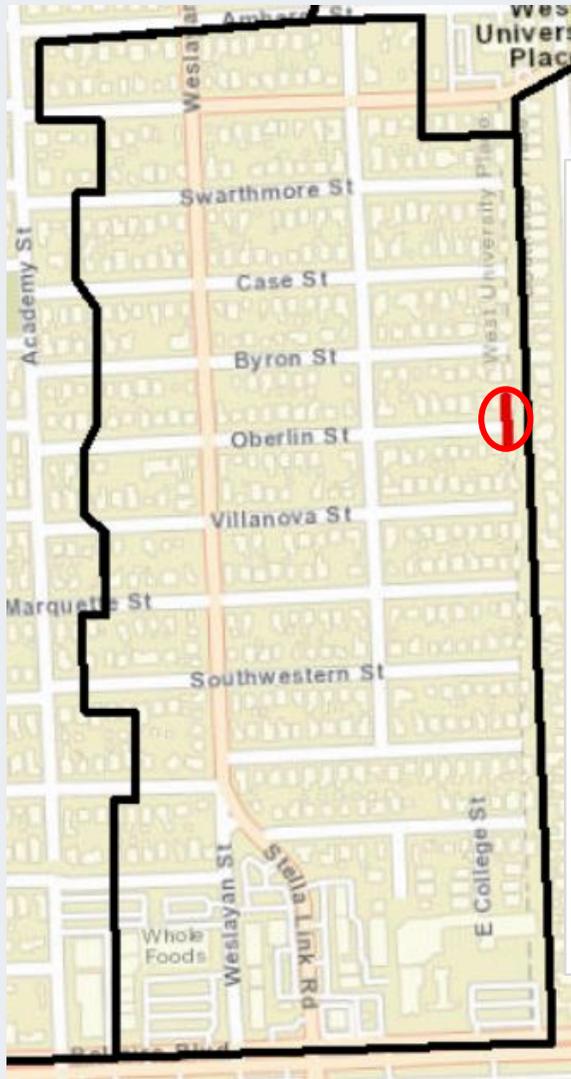
Street ROW

10-Year Scenario



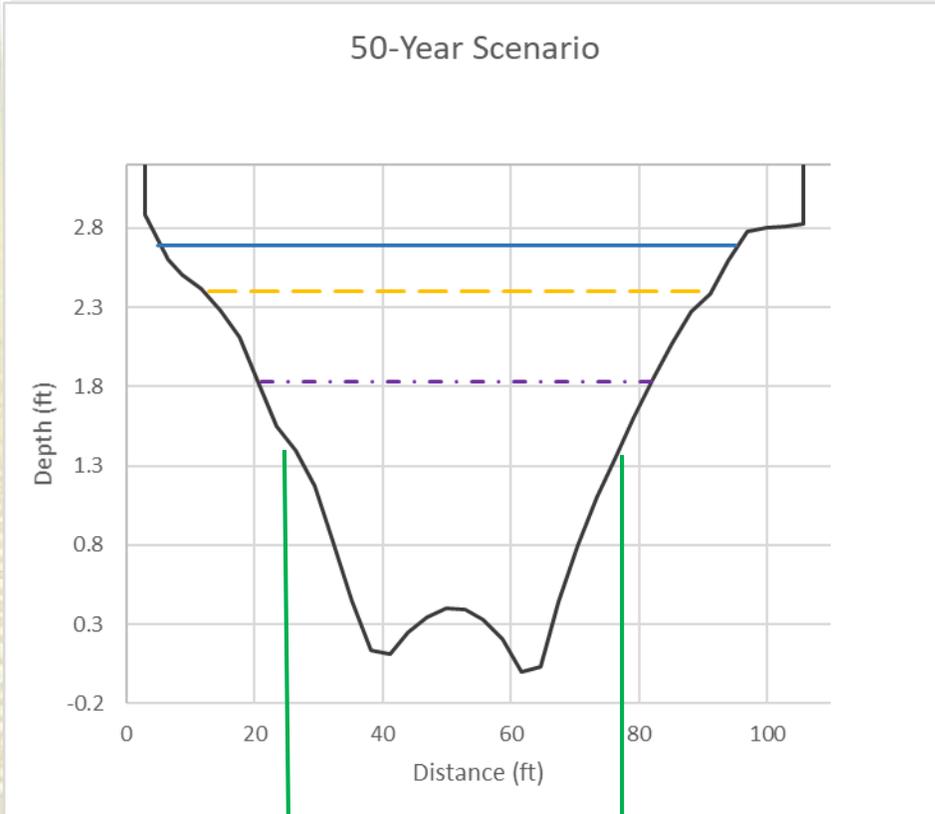
Street ROW

- WSEL Existing
- - - WSEL Proposed w/ Restrictor
- . . . WSEL Proposed w/o Restrictor

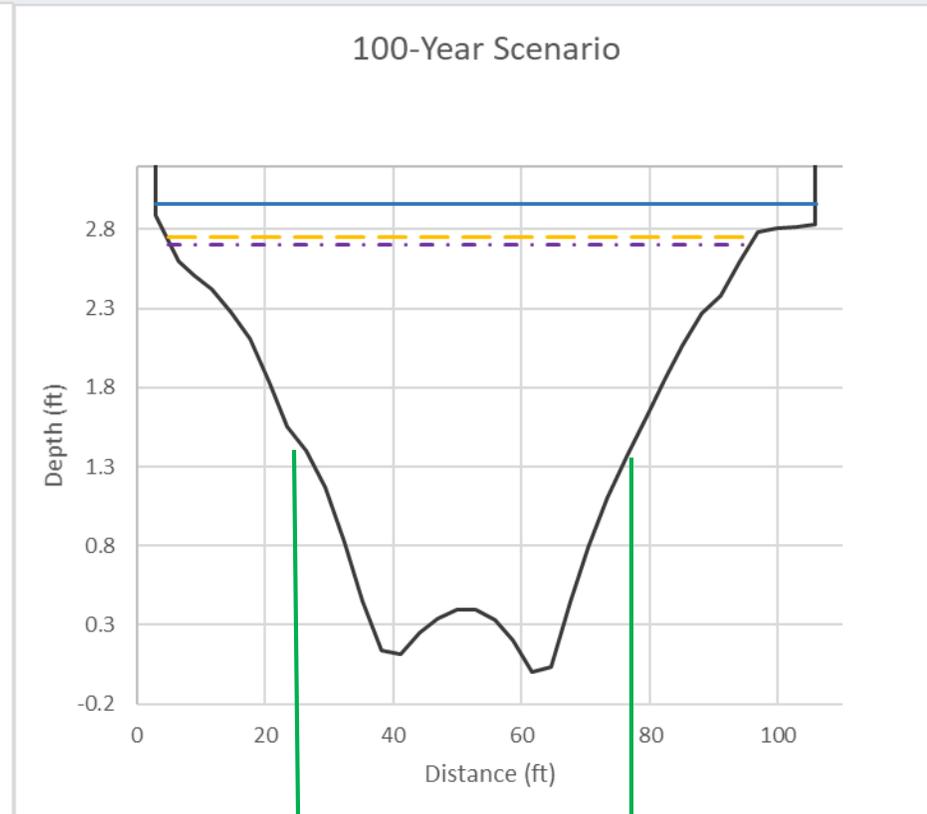


- WSEL Existing
- - - WSEL Proposed w/ Restrictor
- · - · - WSEL Proposed w/o Restrictor

WSEL = Water Surface Elevation
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Street ROW

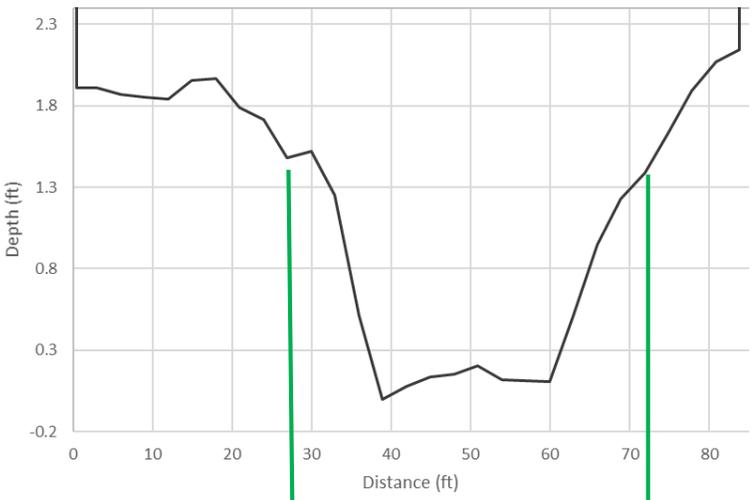


Street ROW

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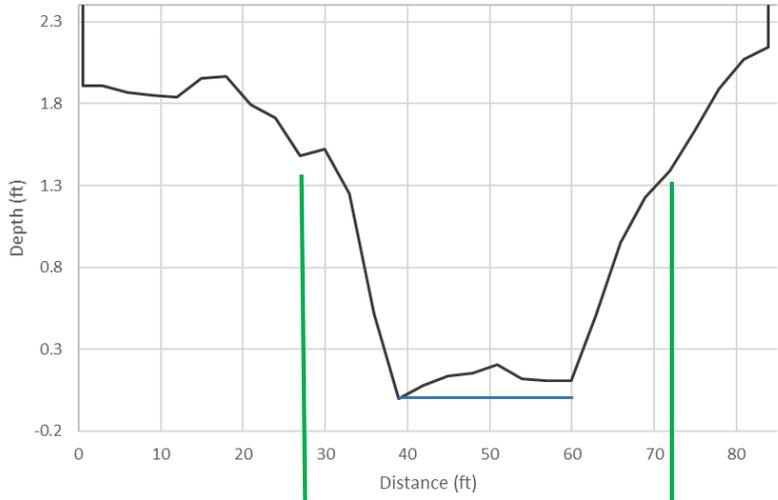


2-Year Scenario



Street ROW

10-Year Scenario



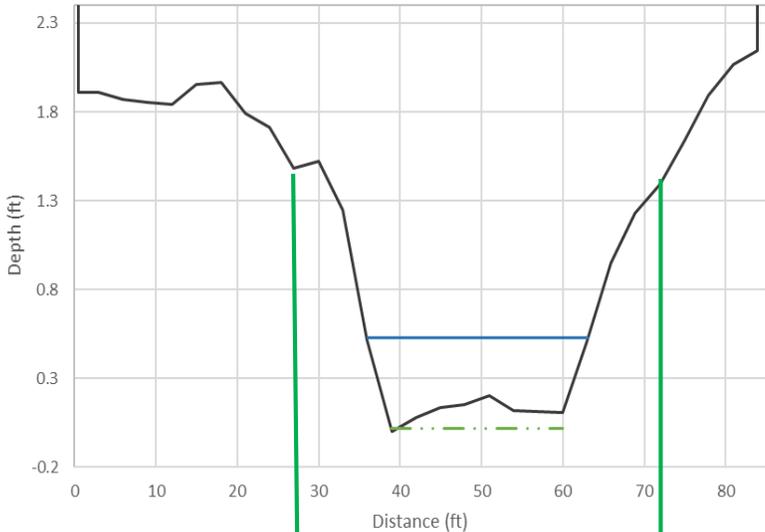
Street ROW

- WSEL Existing
- - - WSEL - Buffalo Speedway
- . - . WSEL - Proposed

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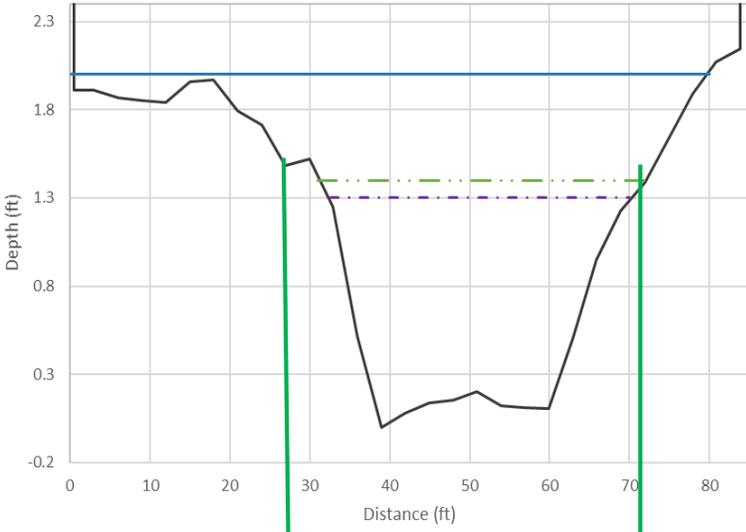


50-Year Scenario



Street ROW

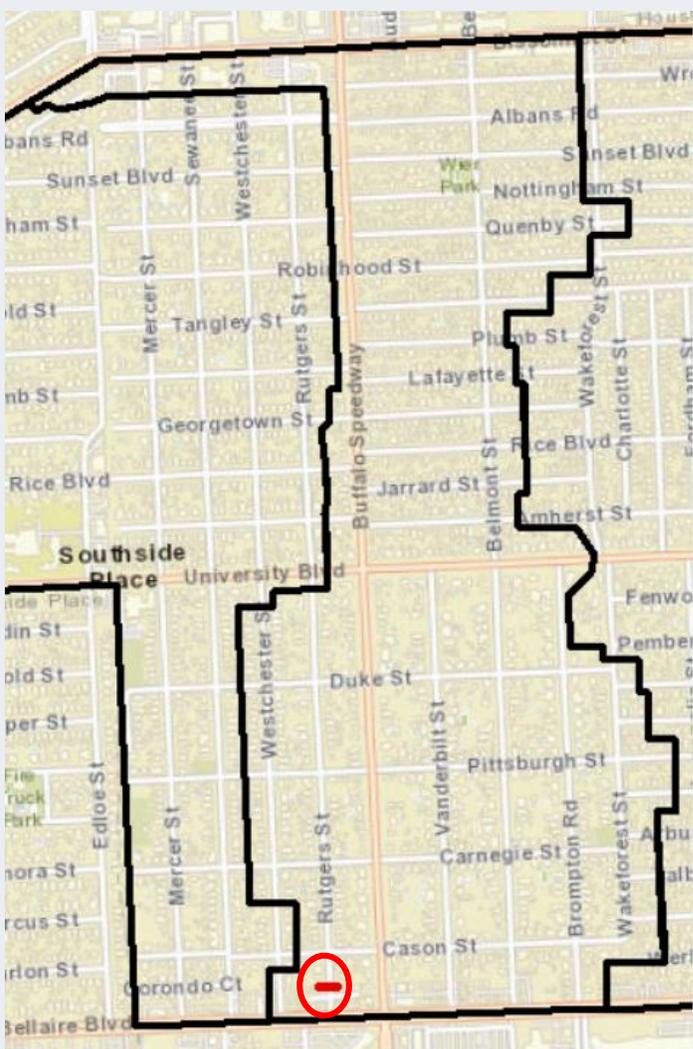
100-Year Scenario



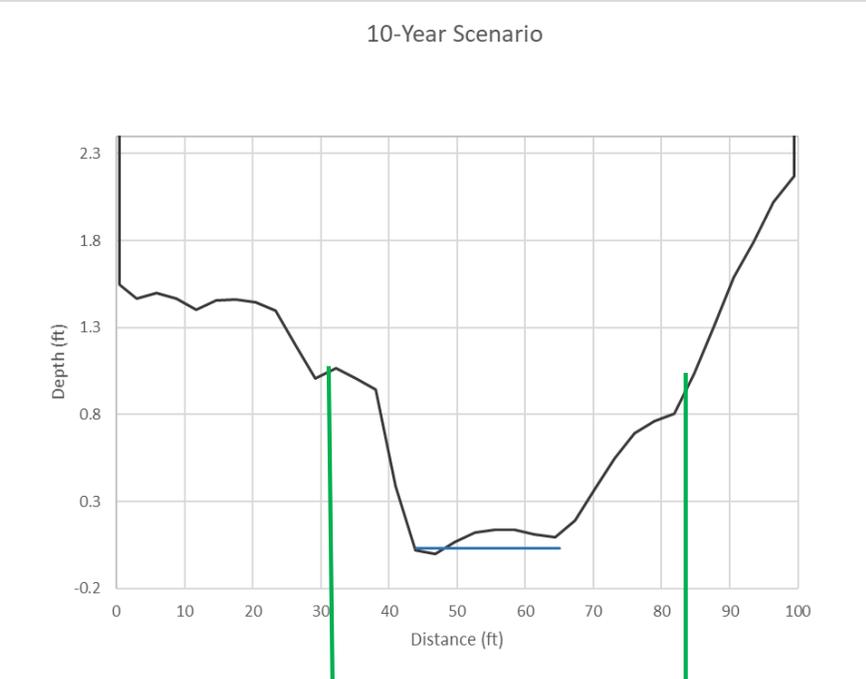
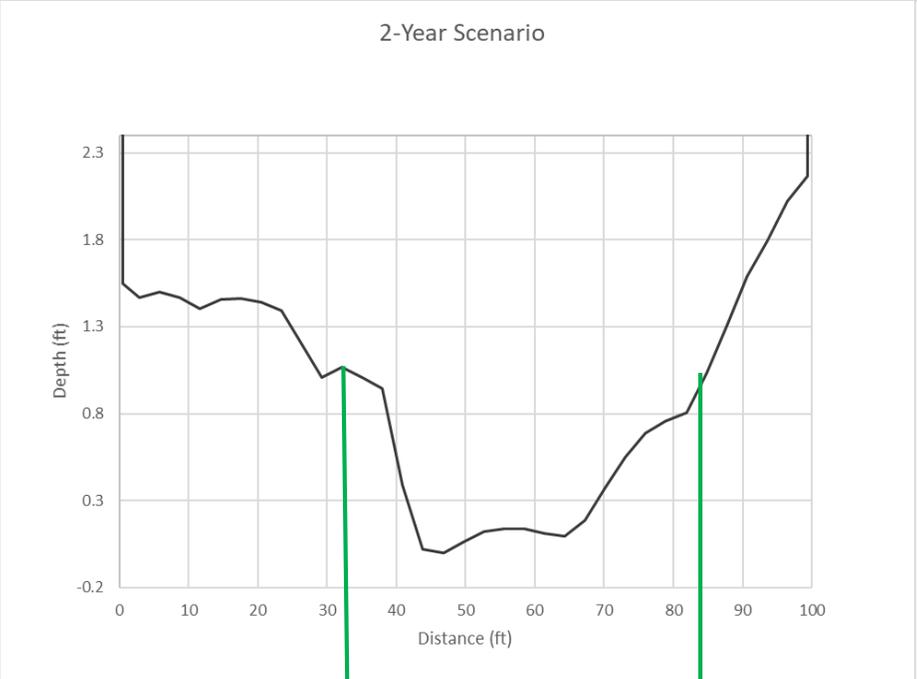
Street ROW

- WSEL Existing
- - - WSEL - Buffalo Speedway
- . - . WSEL - Proposed

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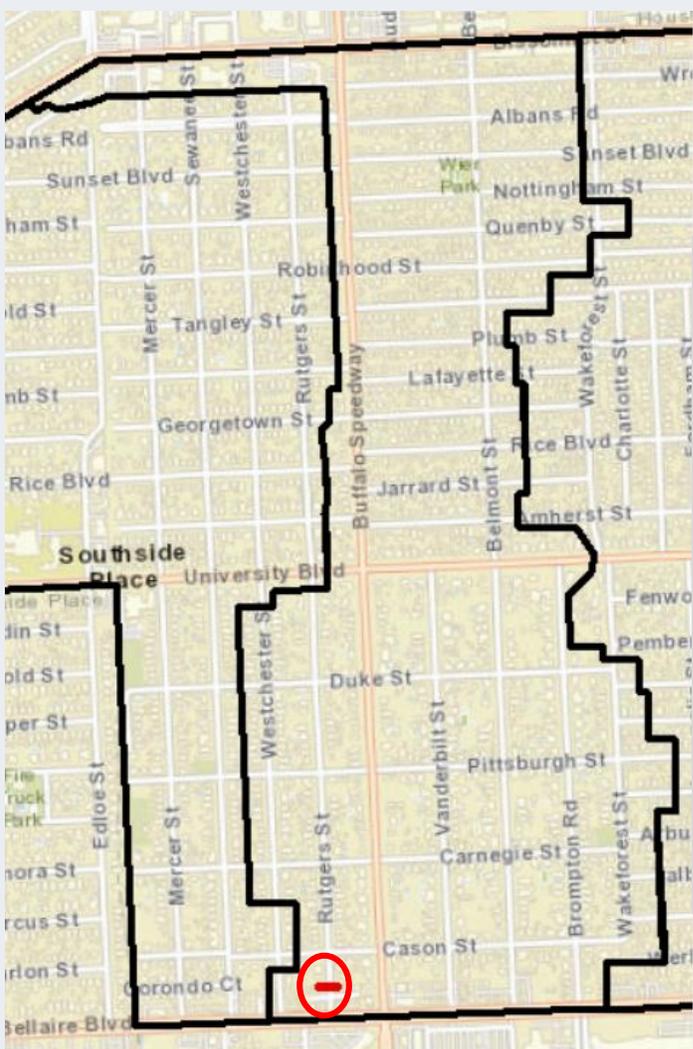
- WSEL Existing
- - - WSEL - Buffalo Speedway
- - - WSEL - Proposed



Street ROW

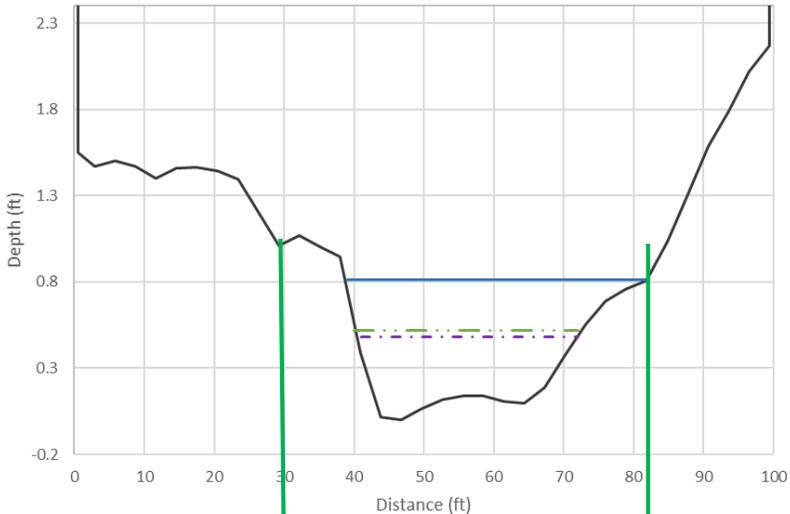
Street ROW

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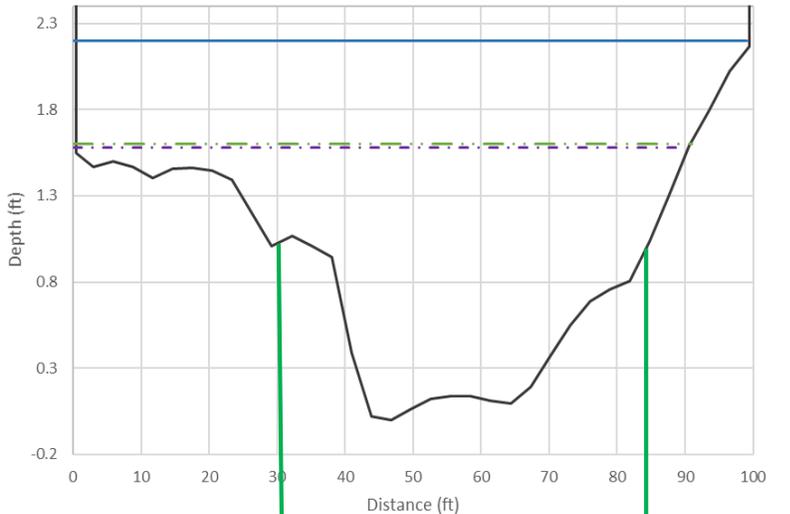
- WSEL Existing
- - - WSEL - Buffalo Speedway
- . - . WSEL - Proposed

50-Year Scenario



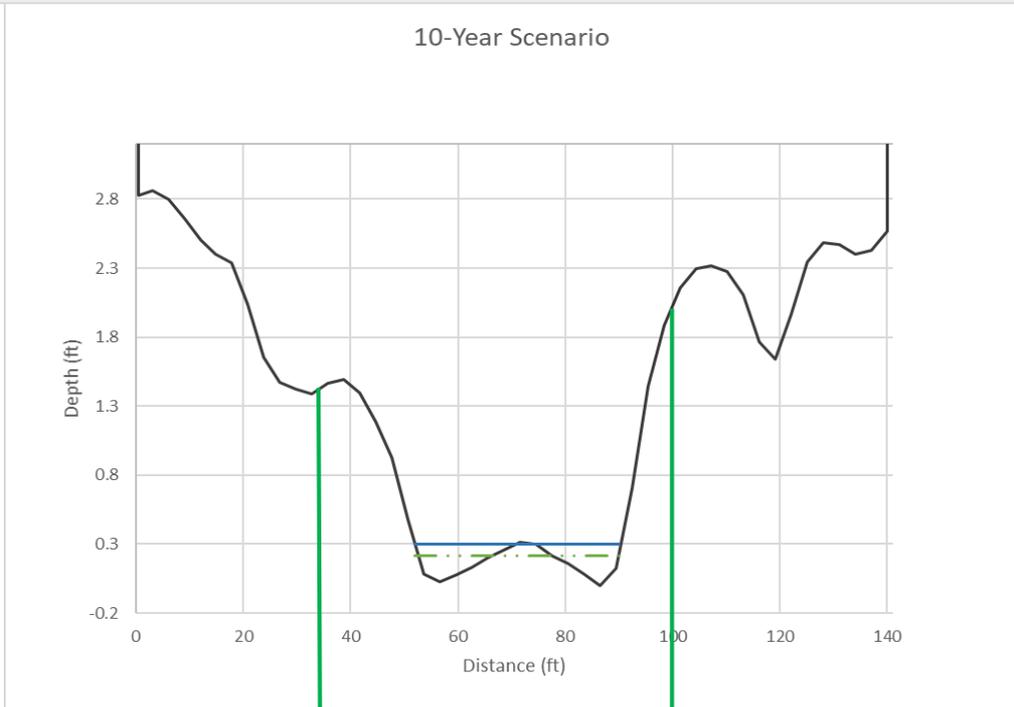
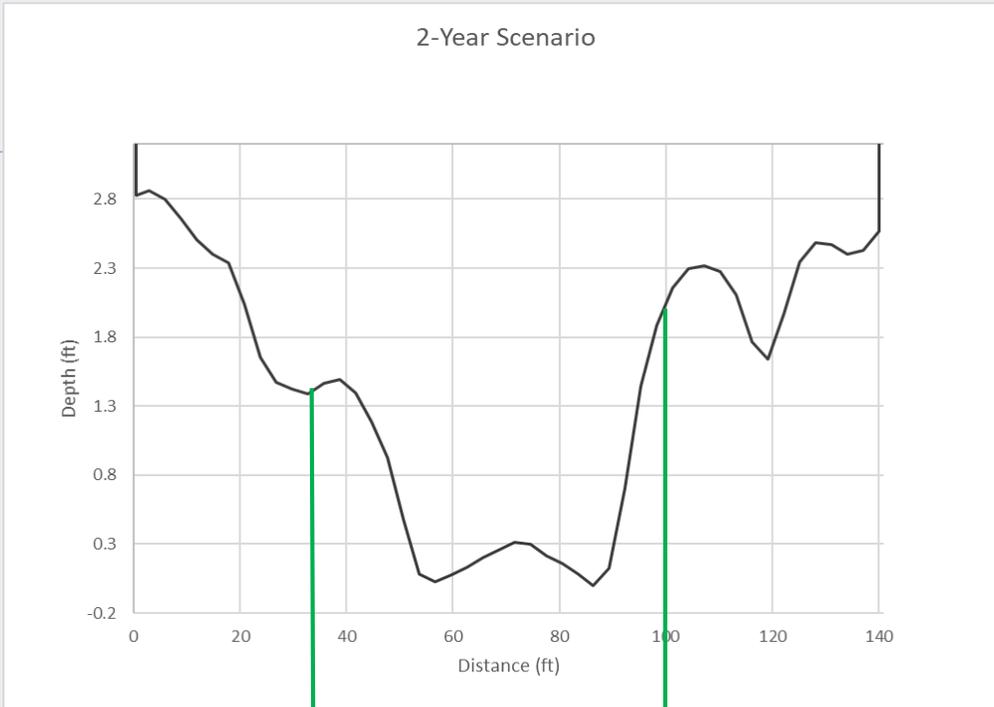
Street ROW

100-Year Scenario



Street ROW

WSEL = Water Surface Elevation
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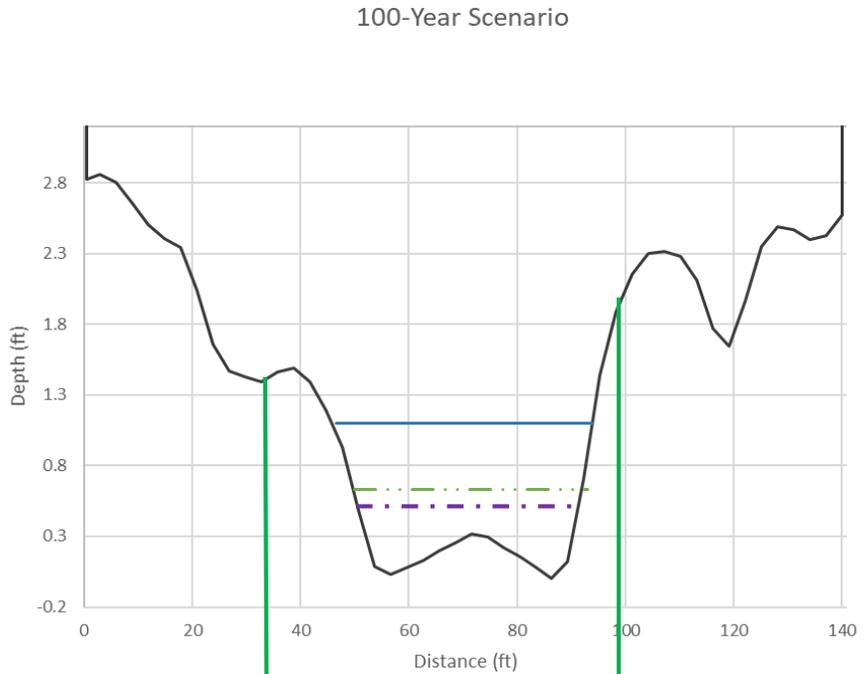
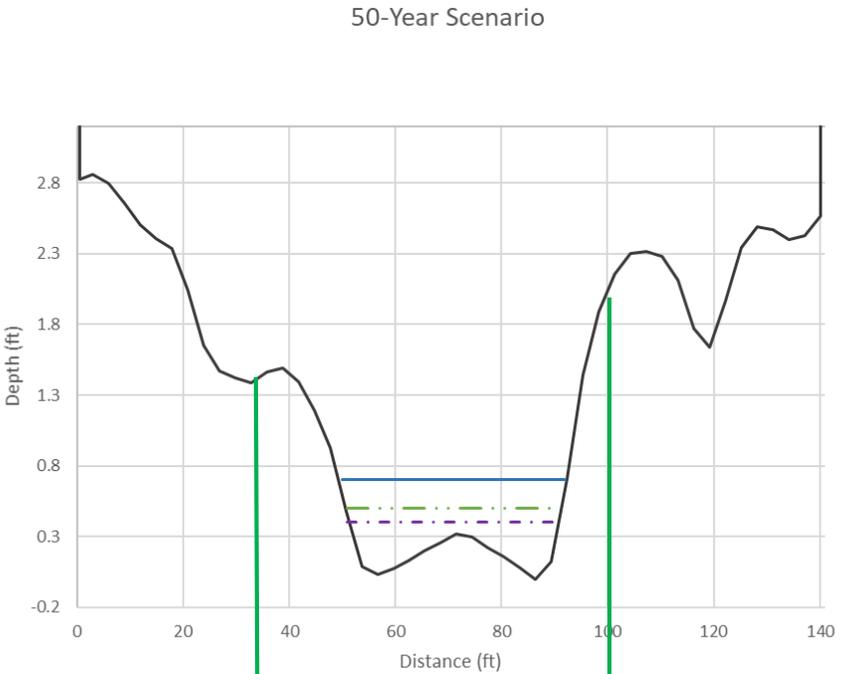


Street ROW

Street ROW

- WSEL Existing
- - - WSEL –Buffalo Speedway
- . . - WSEL – Proposed

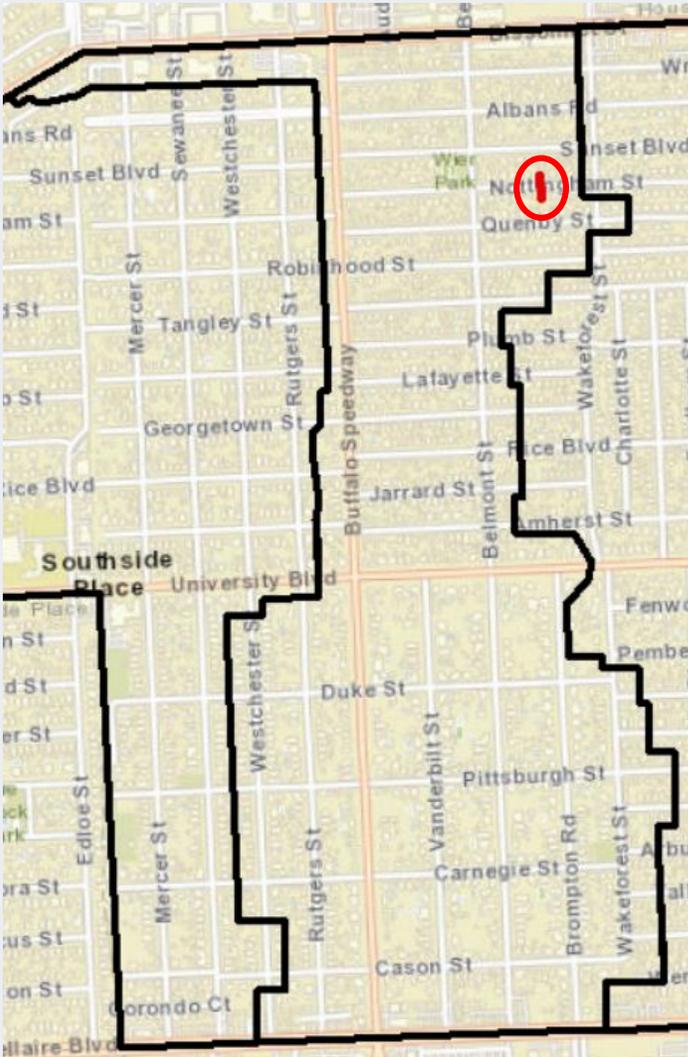
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No WSEL line means the WSEL is below the street elevation



Street ROW

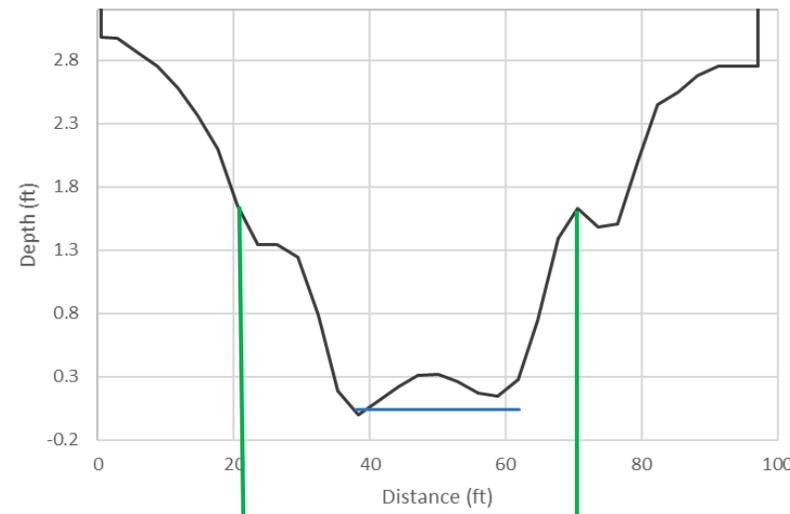
Street ROW

- WSEL Existing
- - - WSEL - Buffalo Speedway
- . - . WSEL - Proposed

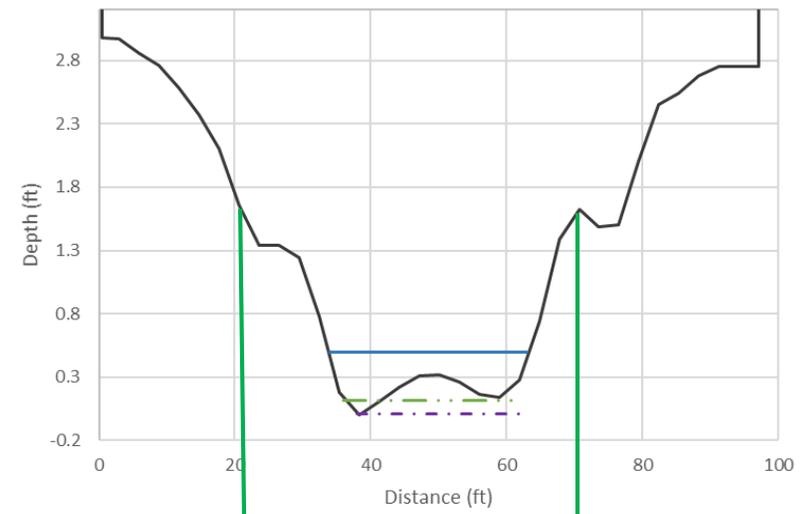


WSEL = Water Surface Elevation
 No WSEL line means the WSEL is below the street elevation

2-Year Scenario



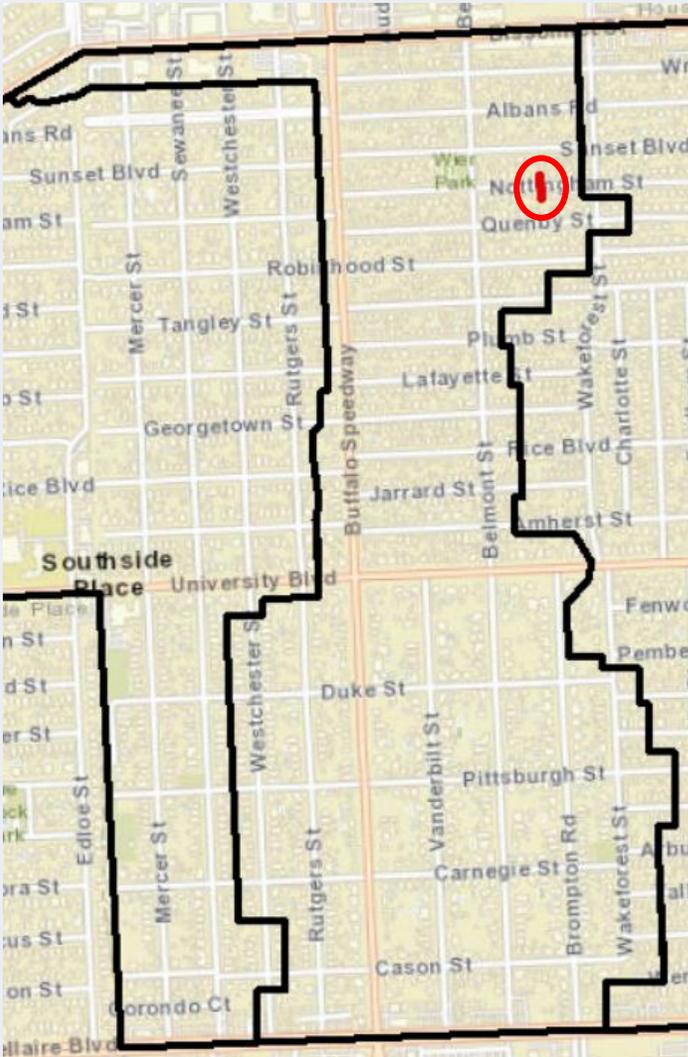
10-Year Scenario



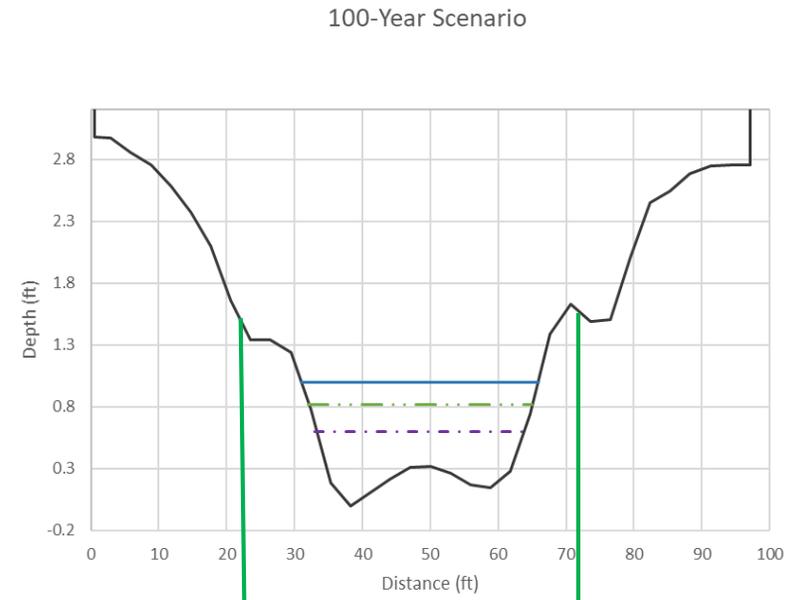
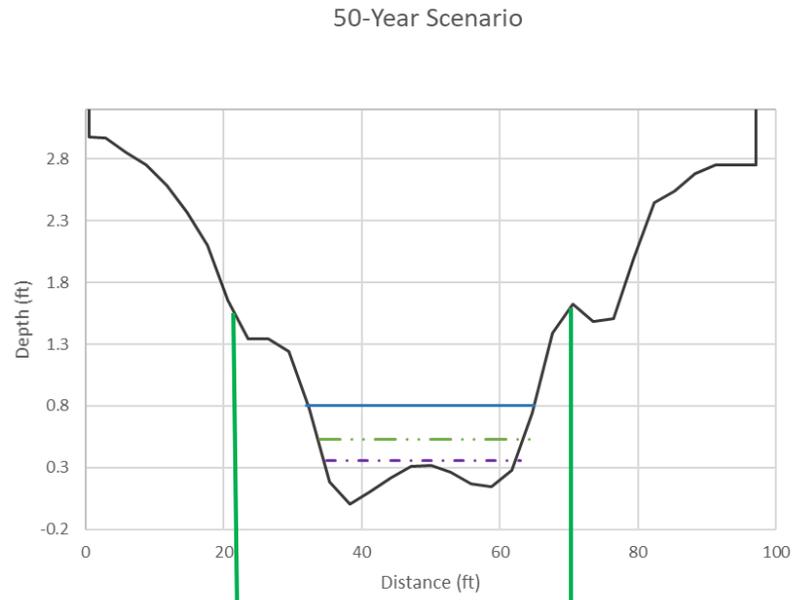
Street ROW

Street ROW

- WSEL Existing
- - - WSEL - Buffalo Speedway
- . . . WSEL - Proposed



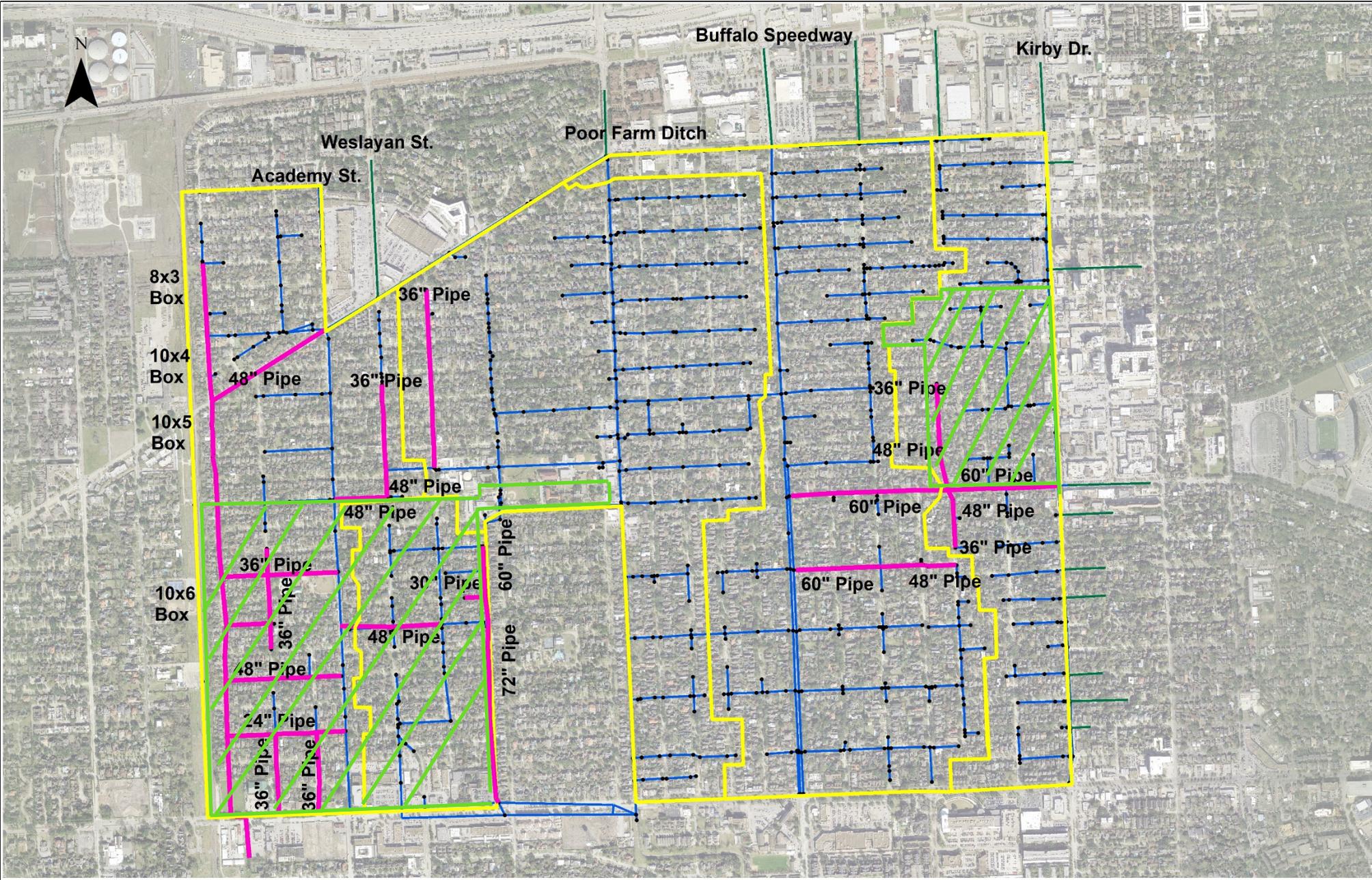
WSEL = Water Surface Elevation
 No WSEL line means the WSEL is below the street elevation



Street ROW

Street ROW

- WSEL Existing
- - - WSEL - Buffalo Speedway
- · · WSEL - Proposed



Estimate \$60M*

 Priority Areas
1-3P

Est. Cost = \$21M

 New Proposed
Pipes

Est. Cost = \$39M

** Cost is in today's
dollars*

Conclusion

- Proposed storm Sewer Improvements provide nearly 50-year Level-of-Service (LOS)
- Estimated Cost Of Proposed Improvements
 - Estimated cost of road and associated drainage improvements, **\$21M.** Priority Area 1-3 of Infrastructure Program
 - *These roadways will need replacement in the next five years, if not sooner.*
 - Estimated cost of the proposed drainage improvements, total **\$39M.**
 - **TOTAL EST. COST OF IMPROVEMENTS = \$60 Million***
*(*shown in today's dollars)*

Questions & Answers

Thank You

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