

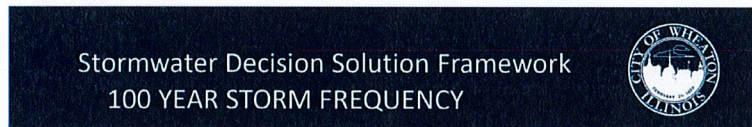
## MEMORANDUM

**TO:** The Honorable Mayor and City Council  
**FROM:** Michael G. Dzugan, City Manager  
**DATE:** February 19, 2021  
**SUBJECT:** Flood Resiliency Investigation – Part 4

Attached is a power point presentation that City Engineer Tebrugge will present at the Planning Session picking up where we left off – why and where does Wheaton flood, what can be done to increase flood resiliency, and information and discussion of grant funding and structure evaluations. Part 4 sets forth a “Stormwater Decision Solution Framework” and generally applies that framework to the three overland flood categories – Floodplain, Flood Prone, and Site Specific. Additionally, four specific examples within the Flood Prone areas are provided.

### Two General Comments

**First**, the chart below is really the culmination and essence of all our work to date. It shows the dollar difference between the two approaches/solutions – Buyouts/Floodproofing versus Capital Improvement Projects.



FLOODPRONE OVERLAND FLOODING									
CUMULATIVE BUYOUT / FLOODPROOFING COST									
Legend	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year		CIP COST	FEMA GRANT
1 Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239		\$11,530,000	
2 Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)		
3 Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000		\$374,400	93,600
4 Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0		\$0	
5	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615		\$1,897,500	
6 Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060		\$132,600	33,150
7 Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,231,860	\$3,941,480	\$5,560,790	\$9,456,180	\$6,832,000	1,708,000
8 Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860		\$2,600,000	
9 Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0		\$0	
10 Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505		\$537,000	134,250
11 Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300		\$3,642,240	910,560
12 Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440		\$2,827,500	
13 Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145		\$1,153,550	
14 Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745	\$4,690,852	
15 Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845		\$1,267,558	316,890
16 TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000		\$120,000	
17 Wakoman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010		\$2,235,094	
Williston Basin	\$0	\$382,945	\$422,945	\$2,635,305	\$3,467,225	\$4,237,630		\$10,000,000	
SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564			

When considering that a Capital Improvement Project will move water away from all structures on a property (dwelling unit, garage, shed, etc.), move water away from the yards, make streets within the areas more passable during a flooding event, and retains an important tax base, the dollar difference between the two approaches/solutions in most of the areas is small.

**Second**, we are at a point with the information and discussion to begin introducing how the City will fund a

Flood Resiliency Program. As is recommended, the next presentation should include an evaluation of funding options for financially sustaining a program.

Attachment



WHEATON MAYOR PHILIP J. SUESS

CITY MANAGER MICHAEL DZUGAN

CITY COUNCIL: MICHAEL BARBIER | ERICA BRAY-PARKER | SUZANNE FITCH | LYNN ROBBINS | JOHN RUTLEDGE | CHRISTOPHER ZARUBA

# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## Flood Protection Program Discussion Part 4

Joseph Tebrugge – Director of Engineering

Kris Dunn – Project Engineer Stormwater

Department of Engineering

February 22, 2021



# CITY OF WHEATON

# FLOOD RESILIENCY INVESTIGATION

## PART 1

- Why does Wheaton FLOOD
- Where is the FLOODING

## PART 3

- Grant Funding
- Structure Elevation

## PART 2

- What can be done to increase FLOOD RESILENCY
- Continue Discussion towards the creation of a FLOOD PROTECTION PROGRAM

## PART 4

- Stormwater Decision Framework



# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## PART 1

- Why does Wheaton FLOOD
- Where is the FLOODING



Flood damages occur because development happened into areas that Flood BEFORE there were regulations to prevent that development from occurring.



2020 Confirmed Results	Floodplain	Flood Prone	Site Specific Flooding
Confirmed <b>Overland</b> Flooding	69	246	145
Percent of Total	15.0%	53.5%	31.5%





# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## PART 2

- What can be done to increase FLOOD RESILENCY
- Continue Discussion towards the creation of a FLOOD PROTECTION PROGRAM



## IN CONCLUSION

2020 Confirmed Results	Floodplain	Flood Prone	Site Specific Flooding
Confirmed <b>Overland</b> Flooding	69	246	145

## GENERAL RESULTS FOR FLOODPLAIN AREAS

Buyouts	Floodproofing
\$24,500,000	\$4,500,000

## GENERAL RESULTS FOR FLOOD PRONE AREAS WHEN LOOKING AT THE BCA DATA

Buyouts	Floodproofing	Capital Improvement Project
\$83,010,708	\$15,560,440	\$41,591,700

## GENERAL RESULTS FOR SITE SPECIFIC AREAS

Floodproofing	Small Scale Regrading Project
\$1,450,000	\$725,000

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Total	Total	Total
\$107,510,708	\$21,510,440	\$42,316,700

# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## PART 3

- Grant Funding
- Structure Elevation



Prepared by: Shauna Urlacher, PE, CFM

UrbanHydro Engineering, Inc.

[Shauna@UrbanHydroEng.com](mailto:Shauna@UrbanHydroEng.com)

# SUMMARY

Project Types	Disaster Declaration	Flood Insured	BRIC	Water Quality		IDNR
	HMGP	FMA		319	GIGO	
Buyouts	✓	✓	!	X	X	✓
Floodproofing	!	!	!	X	!	X
Infrastructure Projects	!	!	✓	✓	✓	X

## Average Cost per House

Rapid Assessment	\$3,000 to \$ 5,000
Soil/Survey/Civil Assessment	\$5,000 to \$ 7,000
Architectural Structural Assessment	\$7,000 to \$12,000
Architectural/Engineering Design	\$7,000 to \$15,000
Final A/E Design	\$7,000 to \$15,000
Mobilization/Demolition/Earthwork	\$TBD
House Elevation Costs	\$ 15,000 to \$35,000
Foundation and Improvement Cost	\$130,000 to \$185,000
Chimney/ Code Deficiencies/Utility	TBD
Patios/Decks/Stairs/Landscapes	TBD
Contingency	TBD
Soft Costs	
(Permits/Abatement/Relocation Costs)	TBD

**About 2-3 Times more  
than initial estimate!**

Probable cost of House Elevation between **\$175,000 and \$275,000**



# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## Results

- Eliminate Structure Elevation from the Floodproofing Option
- Keep Program Investigation to 100-year storm level
- Do not use BCA as focus of program

## PART 3

- Grant Funding
- Structure Elevation



# CITY OF WHEATON

# FLOOD RESILIENCY INVESTIGATION

## PART 1

- Why does Wheaton FLOOD
- Where is the FLOODING

## PART 3

- Grant Funding
- Structure Elevation

## PART 2

- What can be done to increase FLOOD RESILENCY
- Continue Discussion towards the creation of a FLOOD PROTECTION PROGRAM

## PART 4

- Stormwater Decision Framework



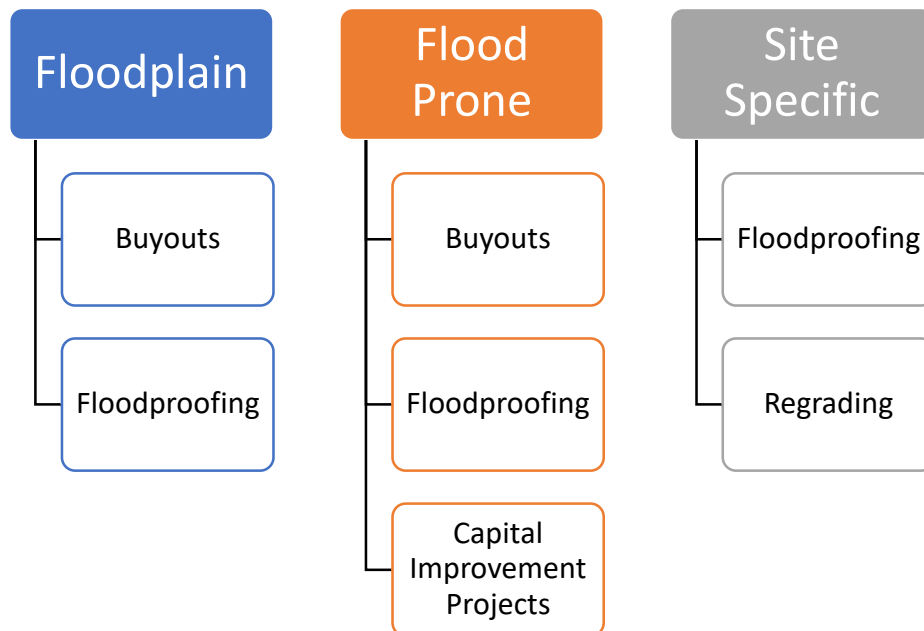
# Stormwater Decision Solution Framework



## What is a Decision Solution Framework?

- A formalized written document that maps out how the City of Wheaton is going to approach Stormwater Solutions for Overland Flooding across the entire City.
- Document that contains all of the qualifying requirements for when programs are eligible to the residents

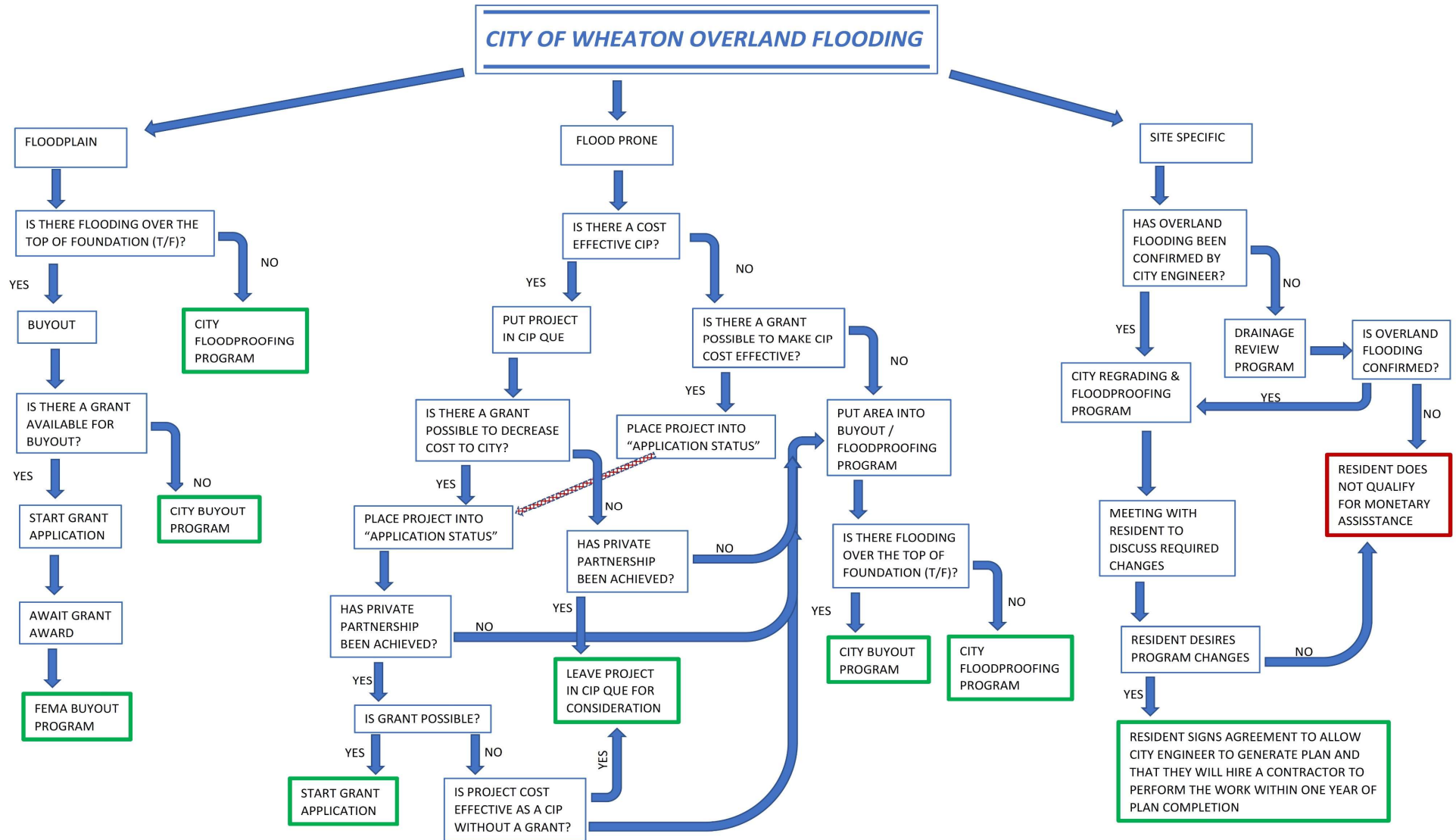
## Why do we need a Decision Solution Framework?

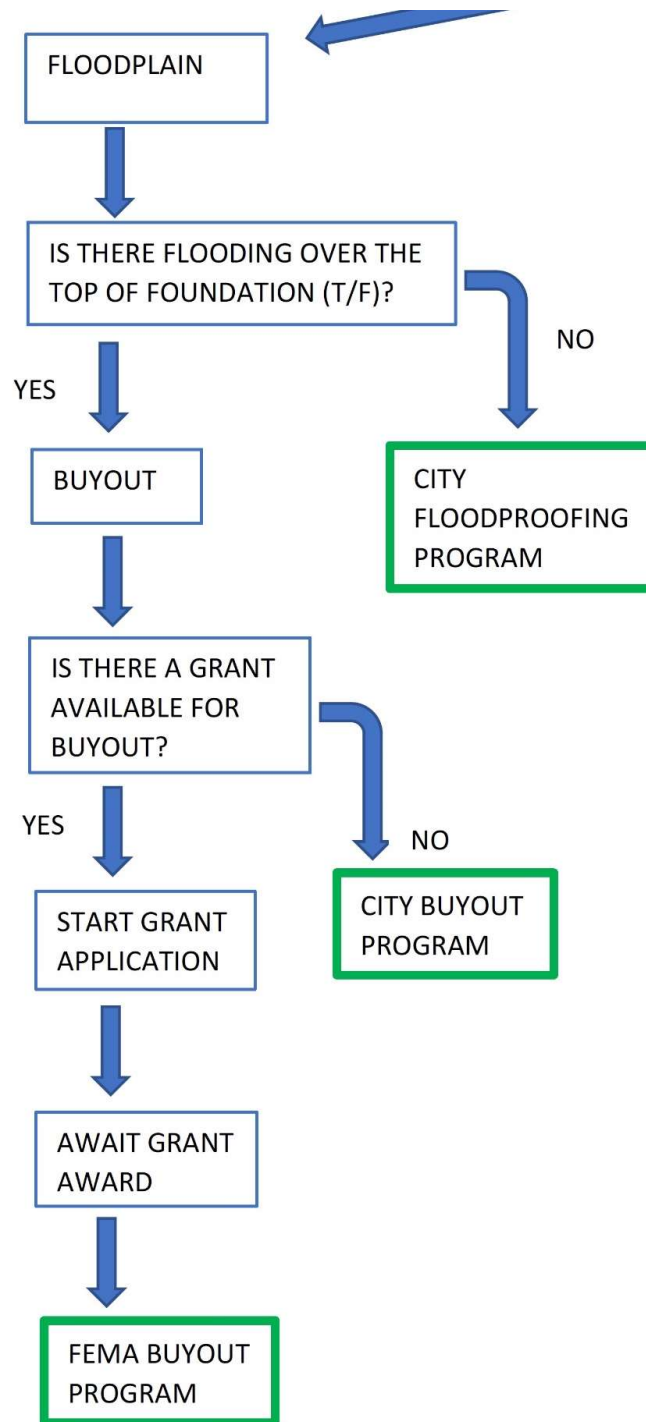


### Cyclical Analysis Problem

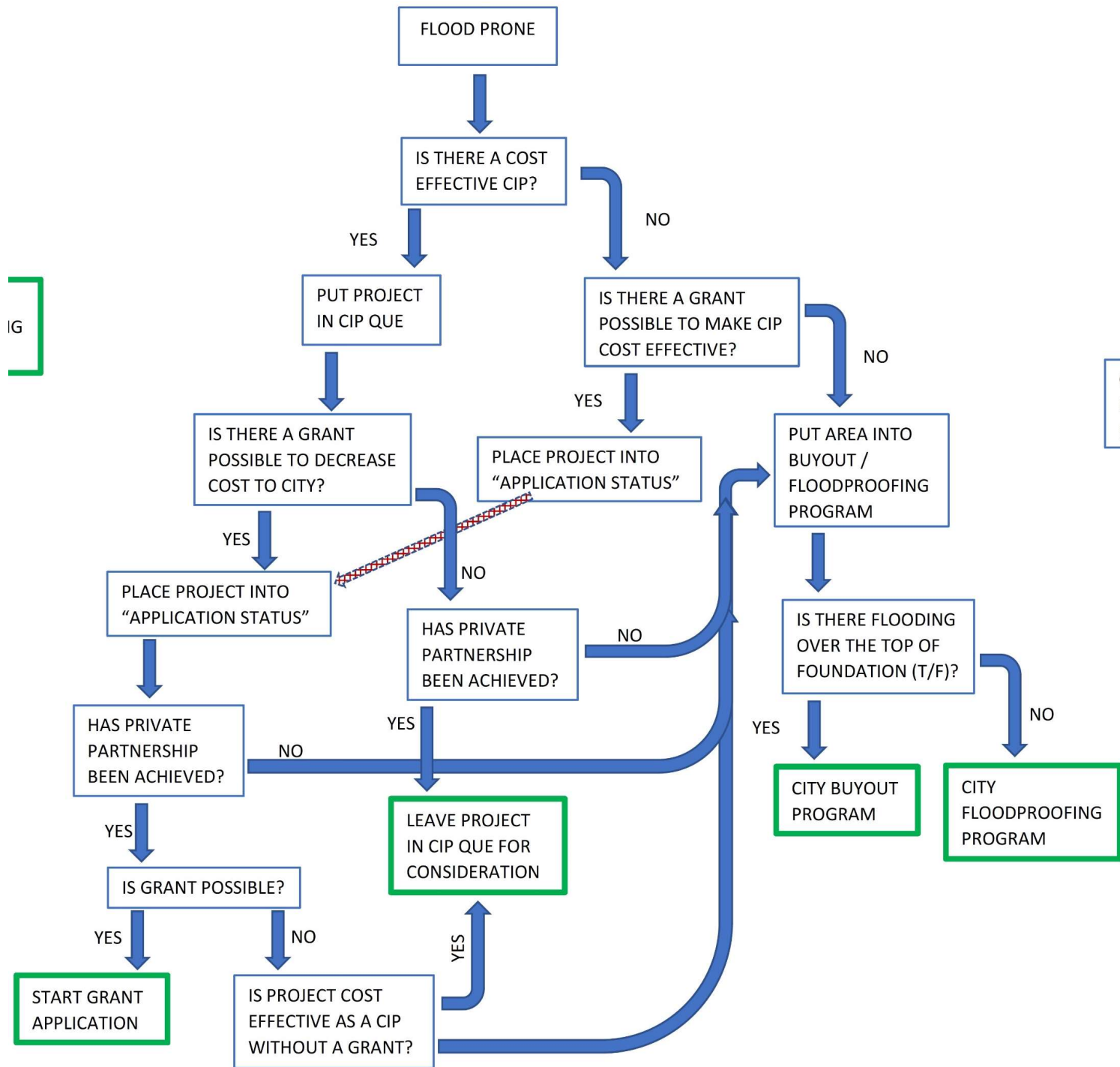
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  - A) Total Cost of Program
  - B) Grant Possibility
  - C) Ability to Complete CIP
  - D) Storm Frequency of Program
- 2) Which changes decisions made in #1

# Stormwater Decision Solution Framework



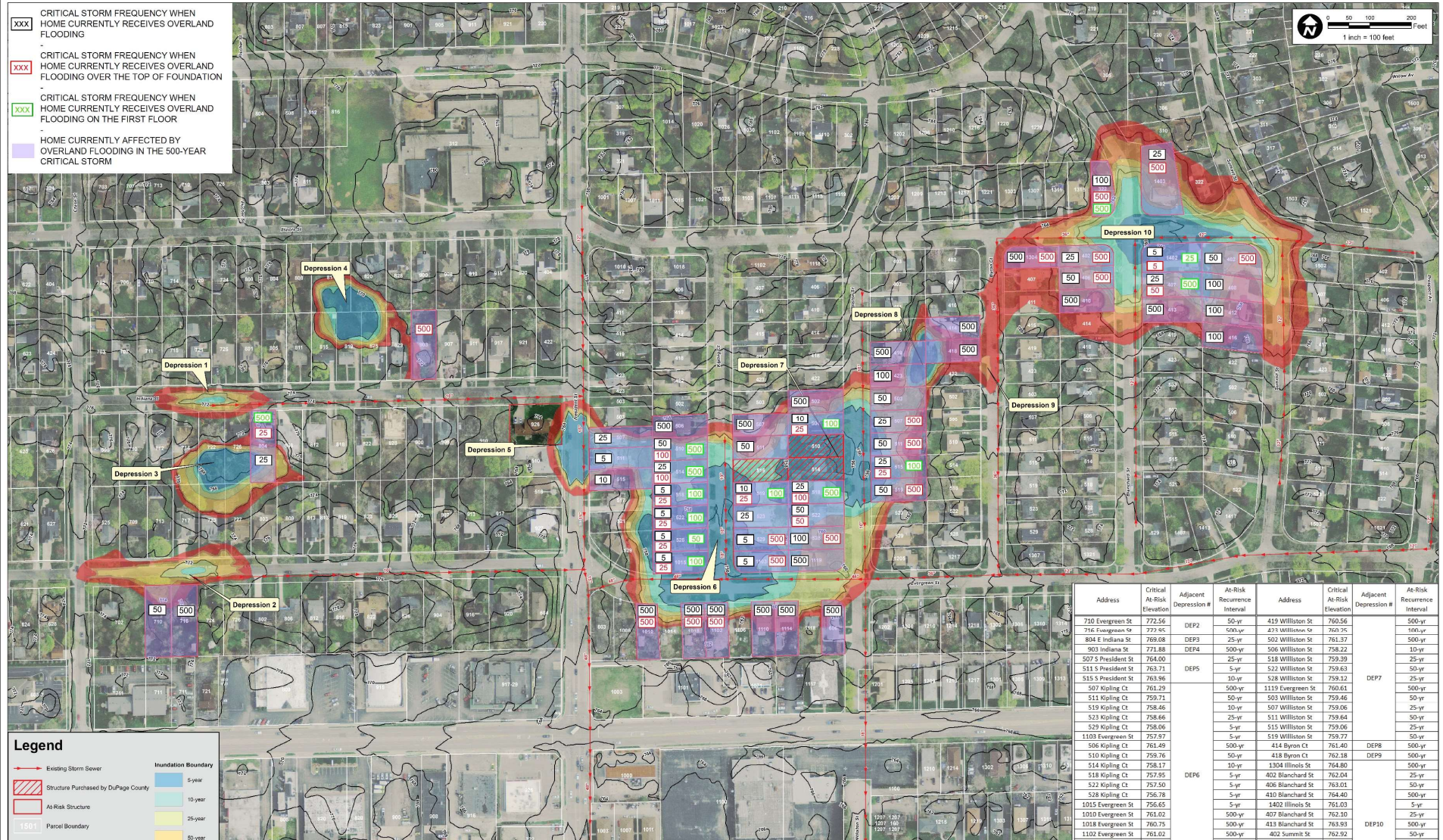






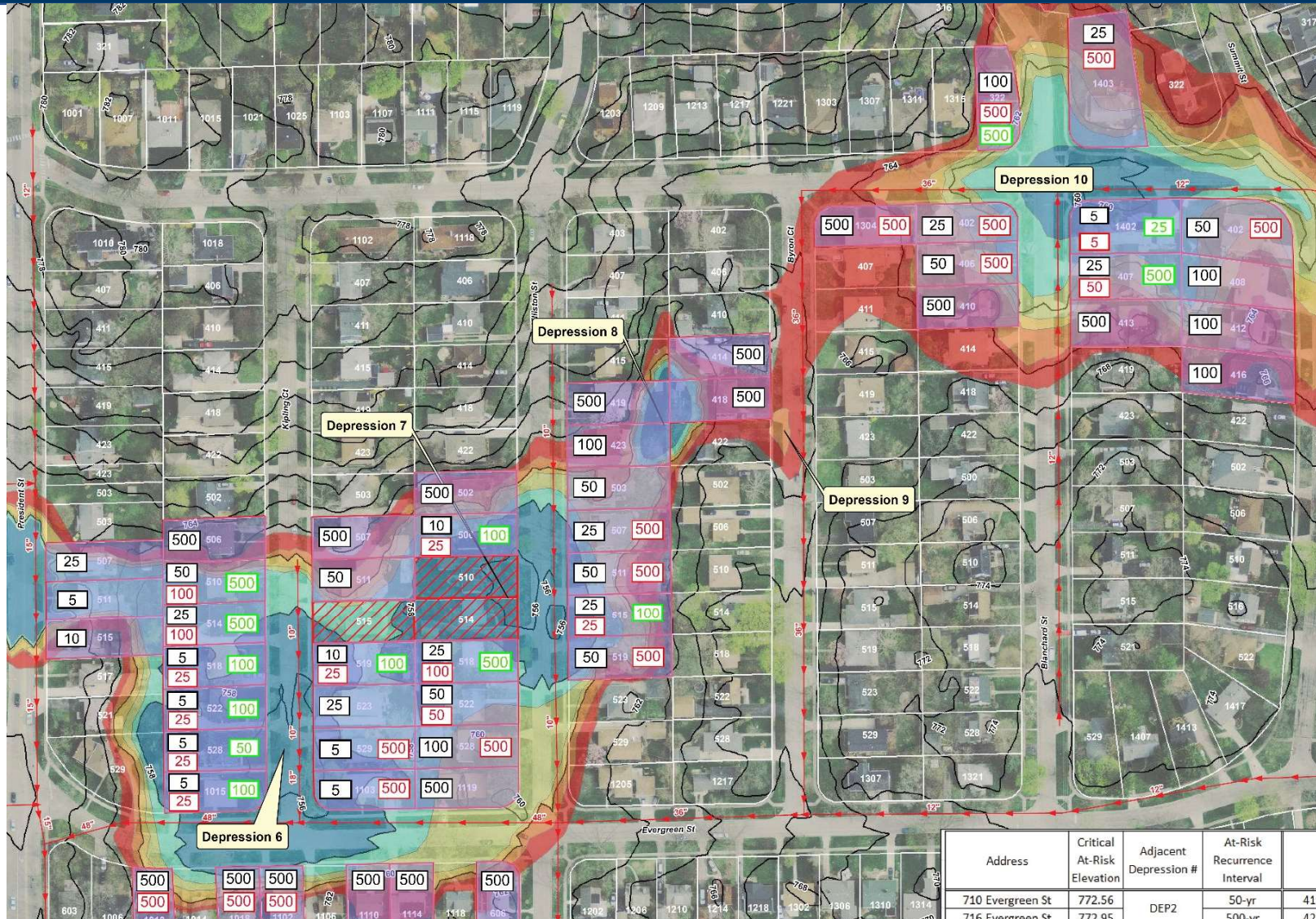


# Willison Basin Flood Study





# Willison Basin Flood Study



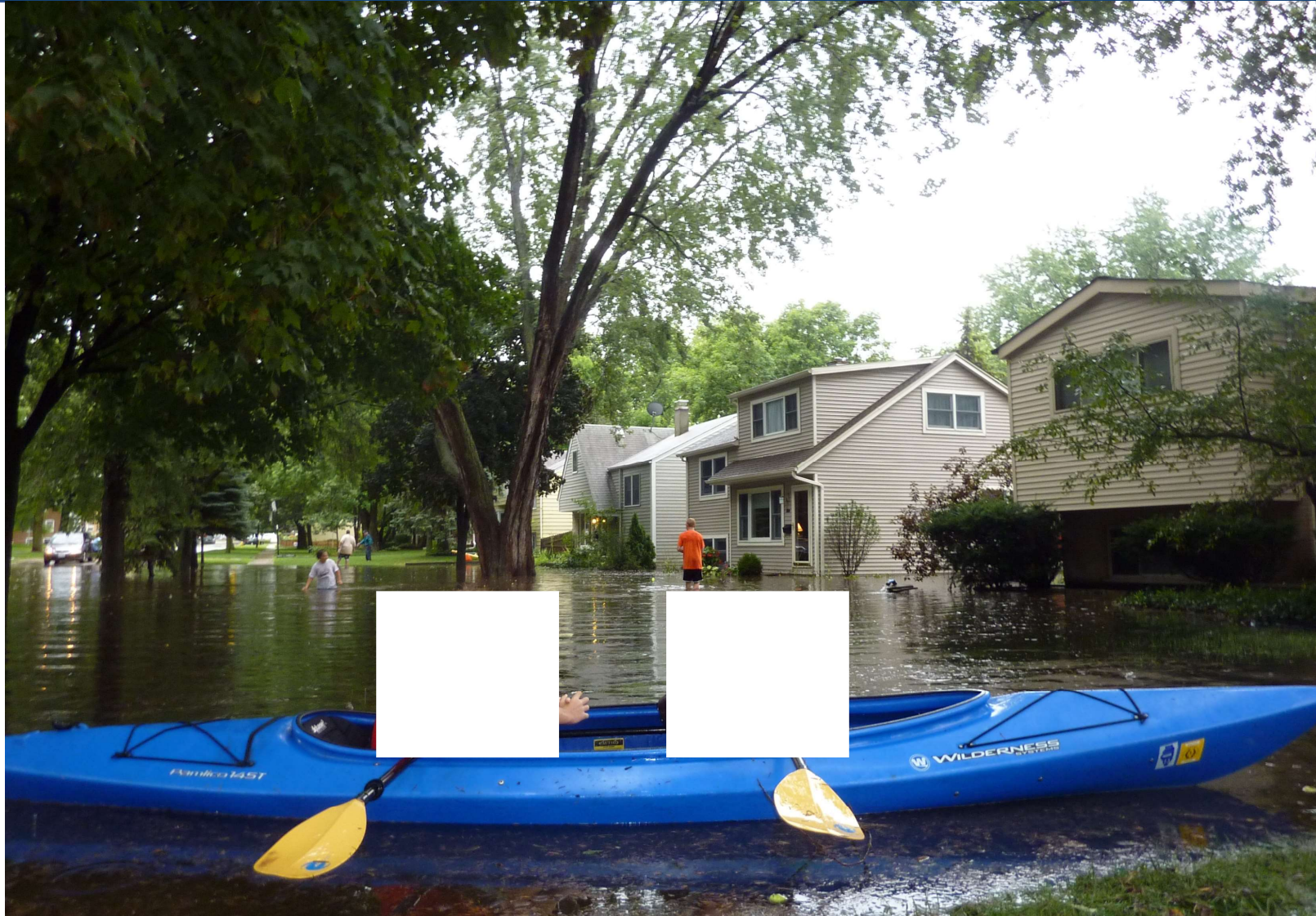


# Willison Basin Flood Study





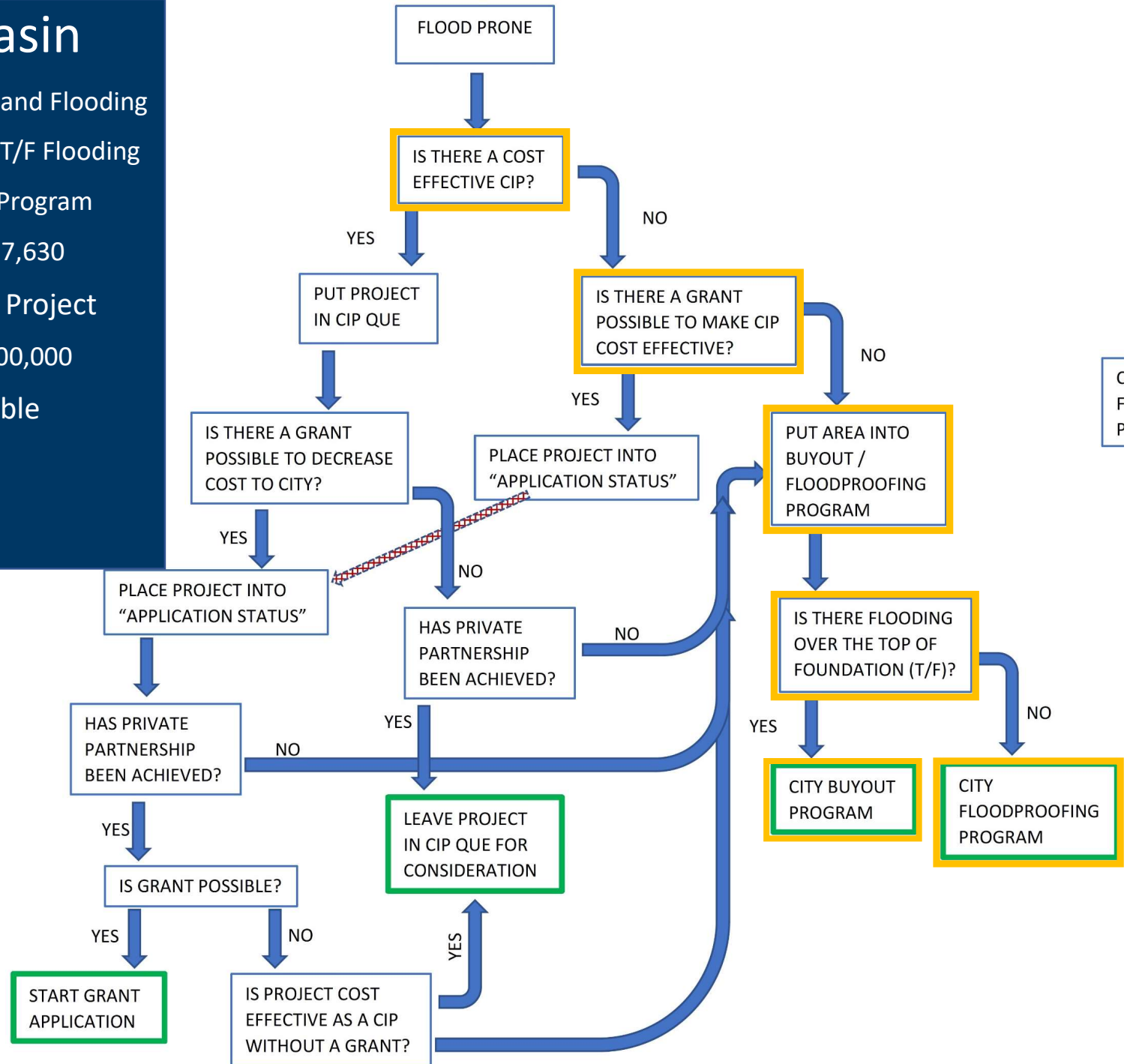
# Willison Basin Flood Study



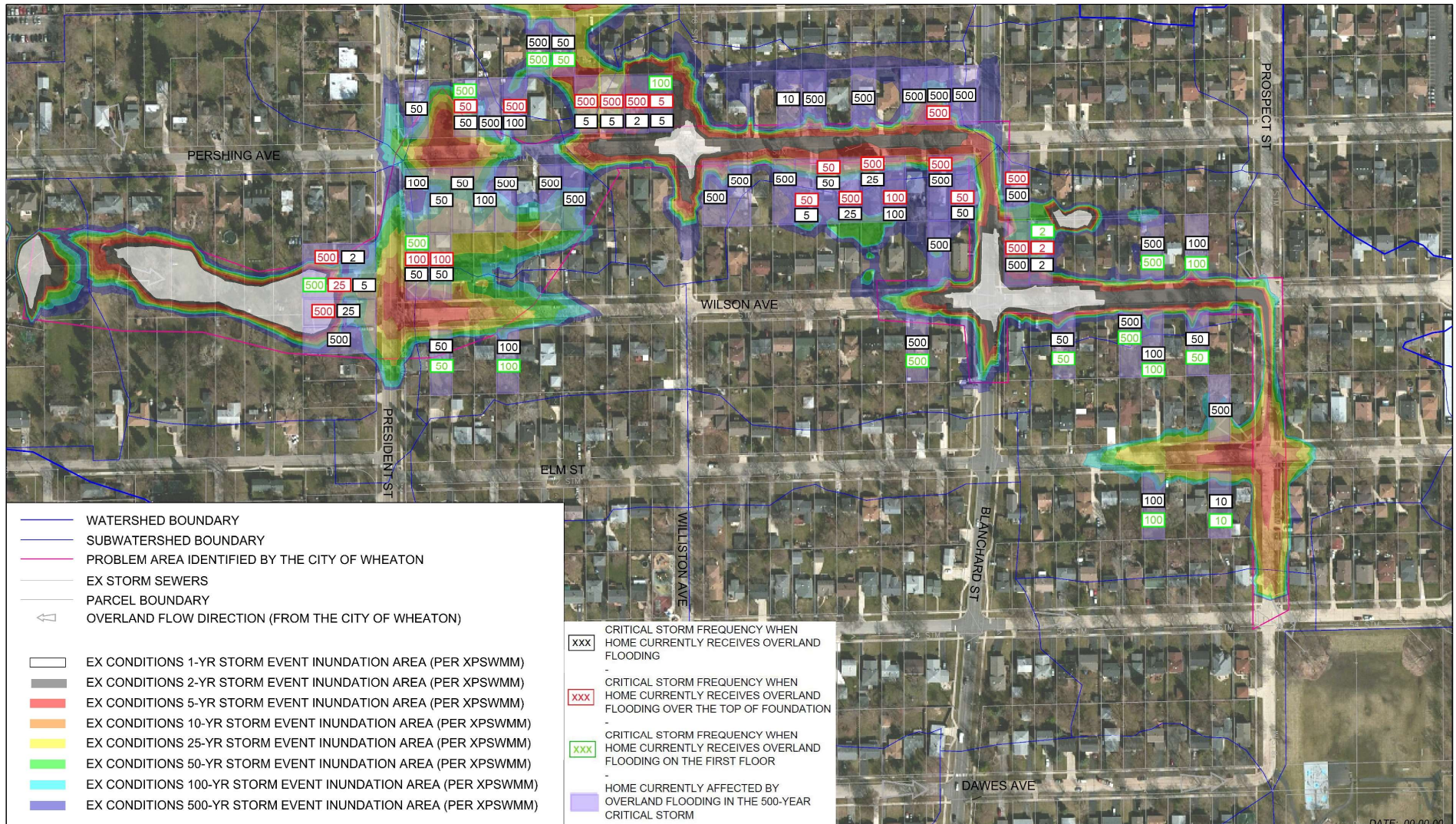


# Willison Basin

- 36 Homes Receive Overland Flooding
- 14 Homes Receive Over T/F Flooding
- Buyout / Floodproofing Program
  - 100 YEAR = \$ 4,237,630
- Capital Improvement Project
  - 100 YEAR = \$10,000,000
  - No Grant Available

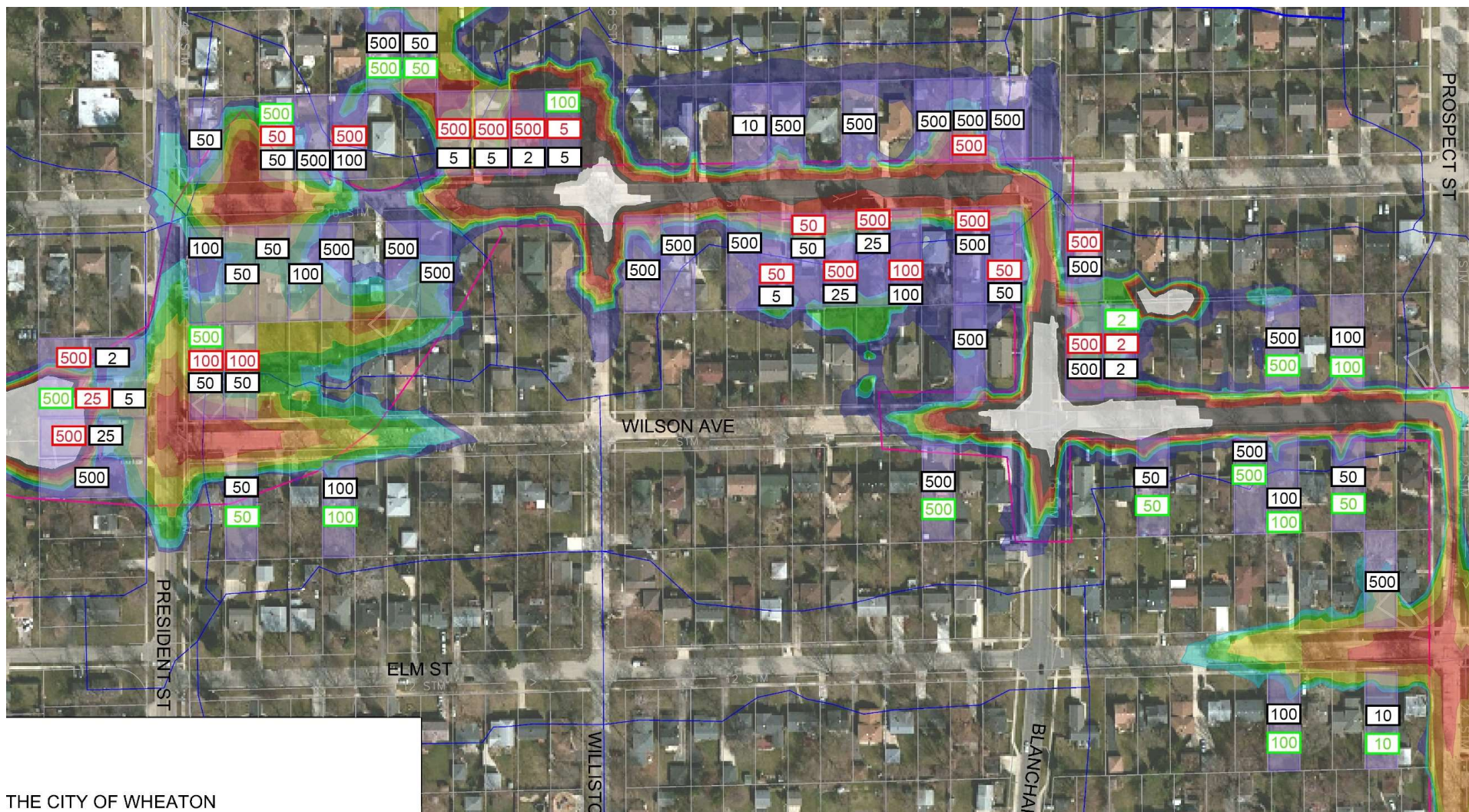


# Pershing East Flood Study





# Pershing East Flood Study



THE CITY OF WHEATON



# Pershing East Flood Study





# Pershing East Flood Study

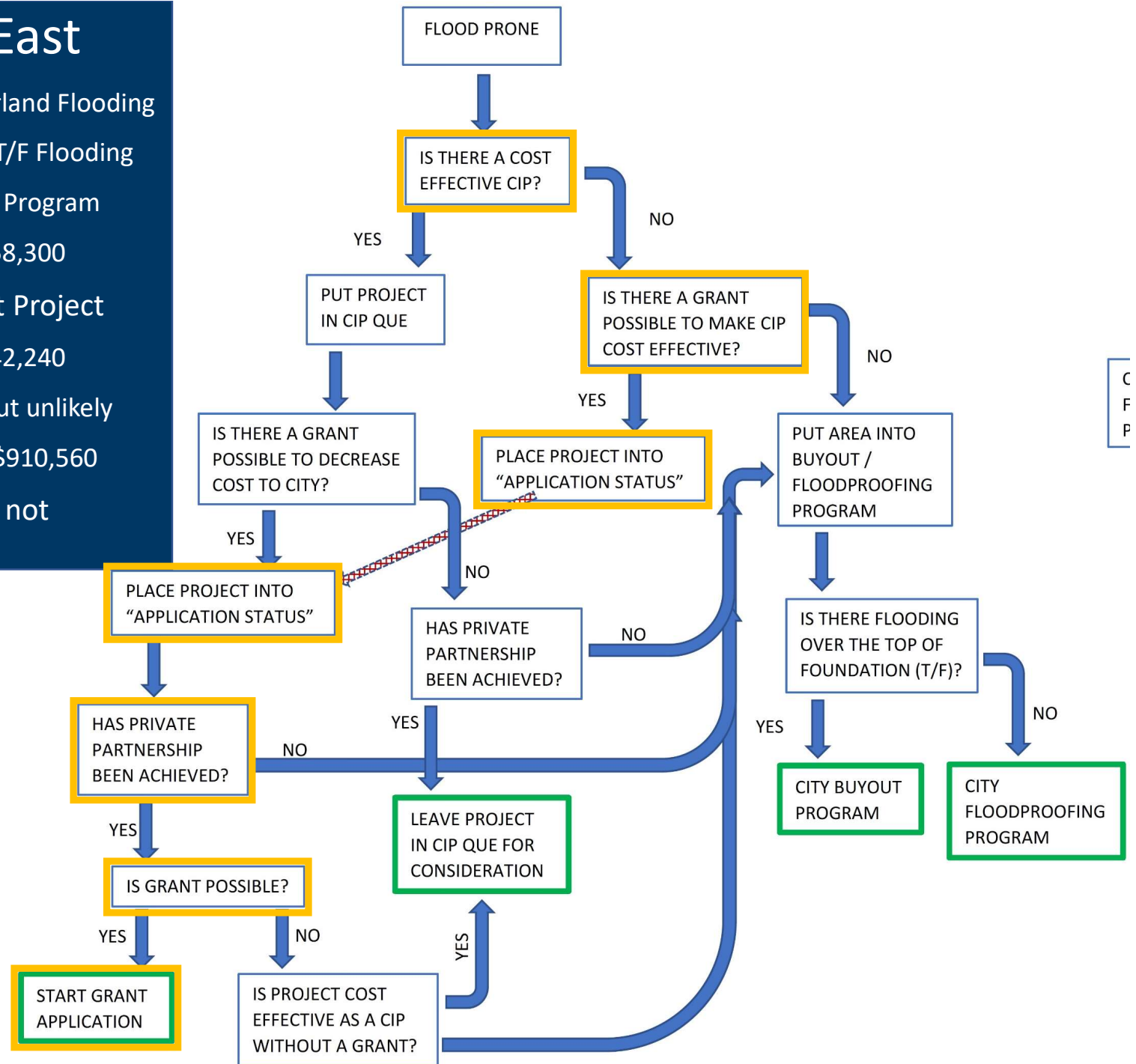






# Pershing East

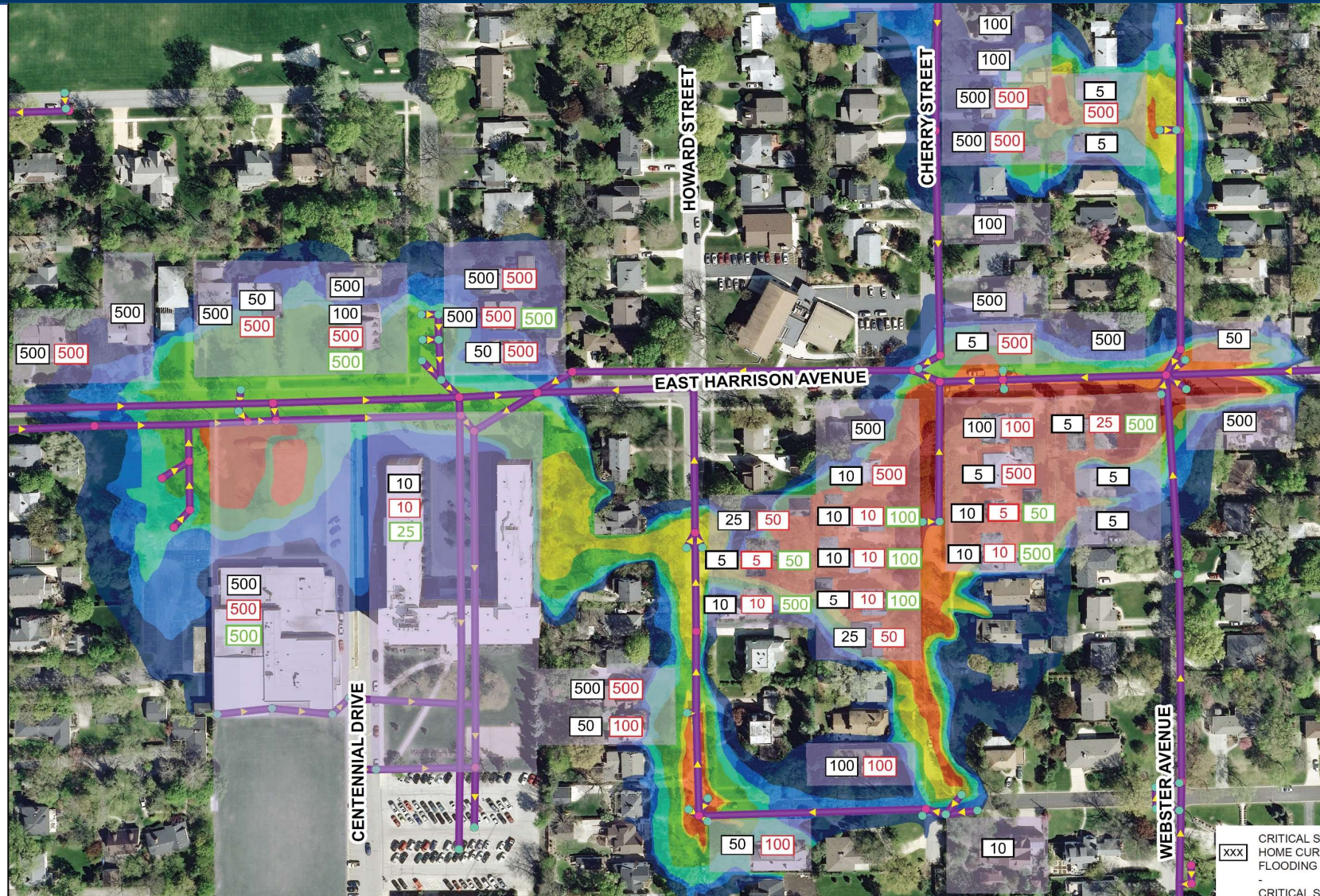
- 32 Homes Receive Overland Flooding
- 9 Homes Receive Over T/F Flooding
- Buyout / Floodproofing Program
  - 100 YEAR = \$3,158,300
- Capital Improvement Project
  - 100 YEAR = \$3,642,240
  - Grant Possible, but unlikely
  - CIP w/ GRANT = \$910,560
- Private Partnership not required





# Harrison/Cherry Flood Studies

\*Two areas were found to be hydraulically linked





# Harrison/Cherry Flood Studies

\*Two areas were found to be hydraulically linked





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# Harrison/Cherry Flood Studies

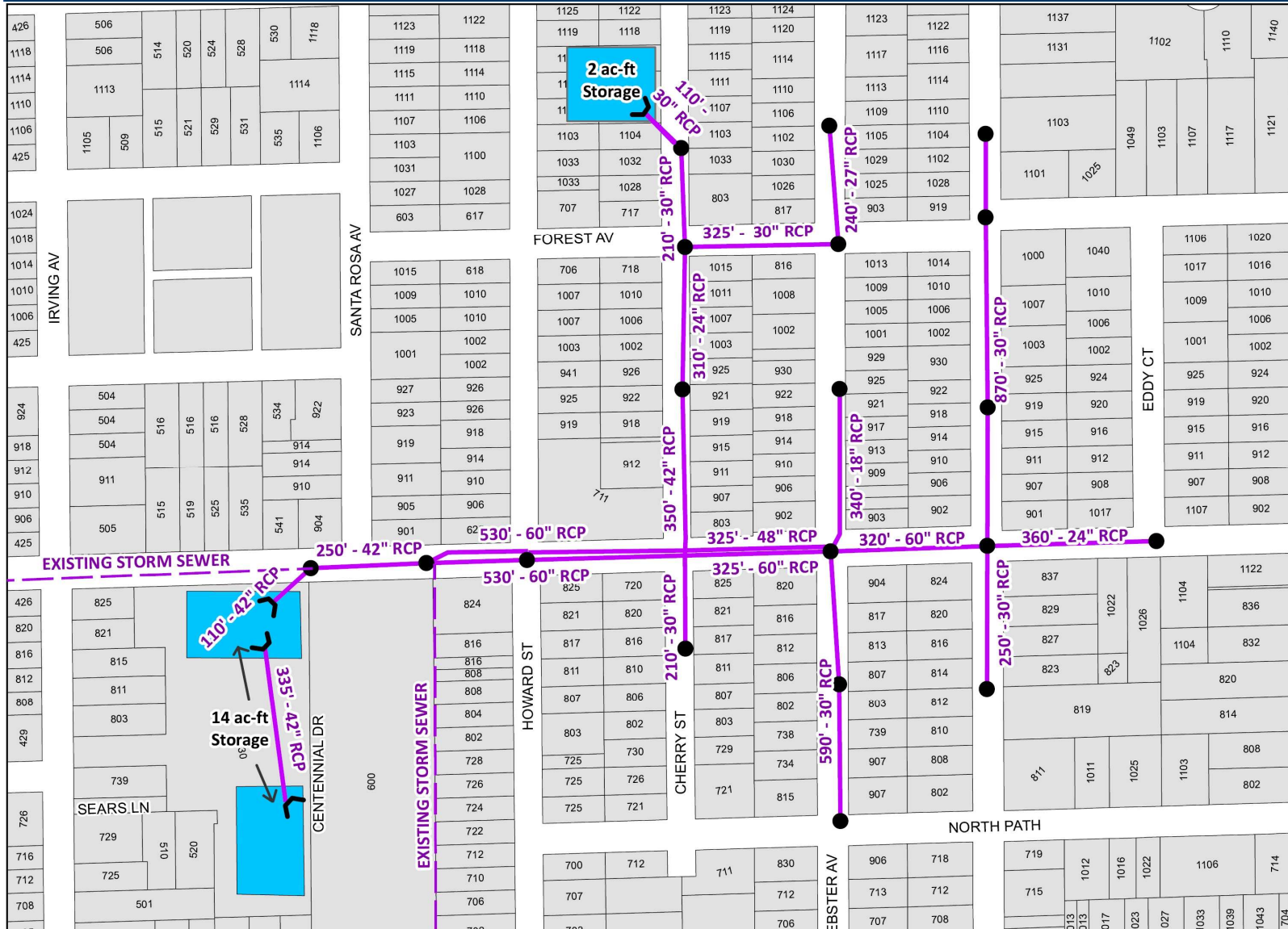
\*Two areas were found to be hydraulically linked



## EXHIBIT 8 Proposed Alternative 3 Wheaton, IL

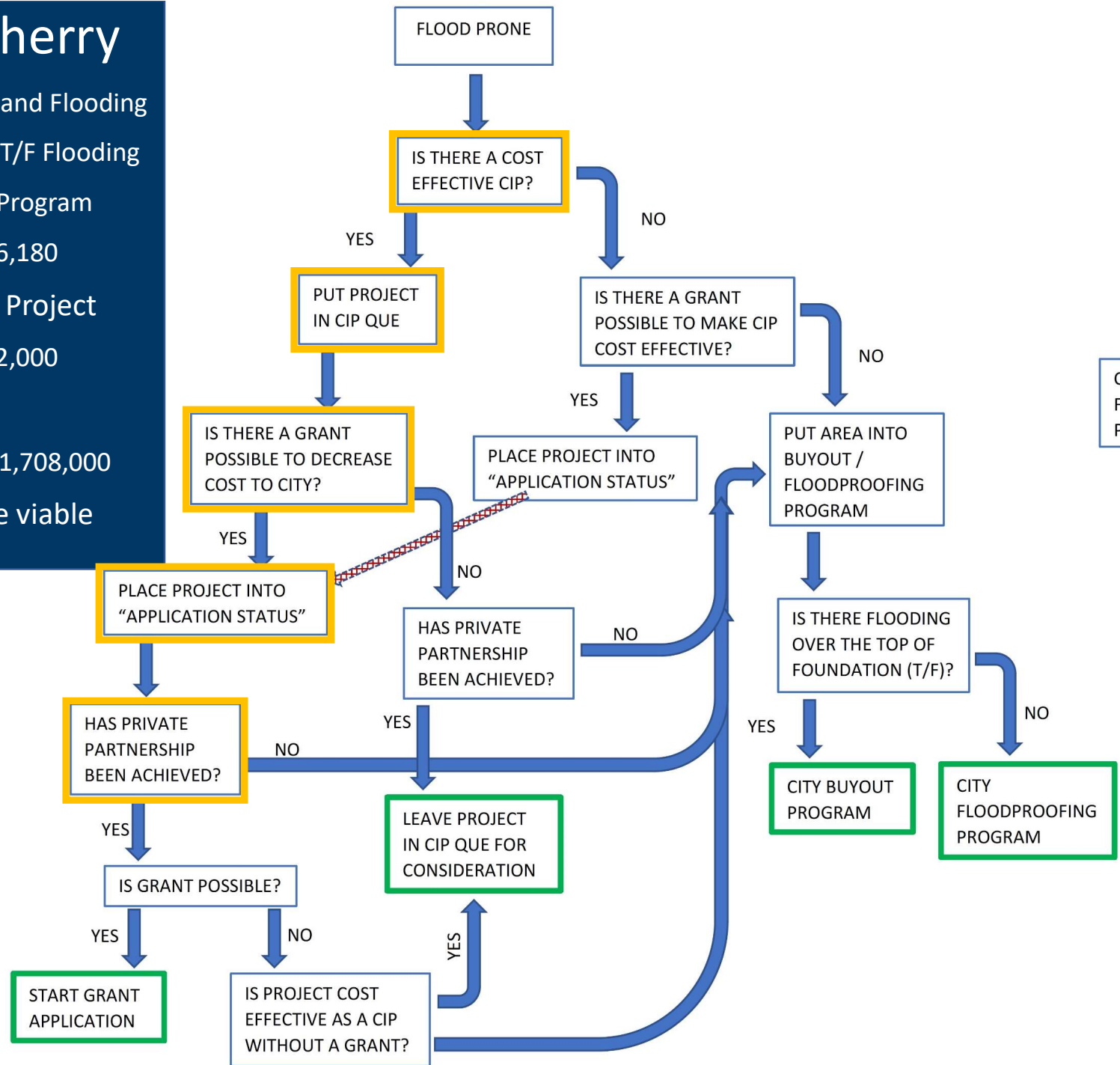
### Legend

- Proposed Storm Structure
- Proposed Storm Sewer
- Proposed Detention Areas



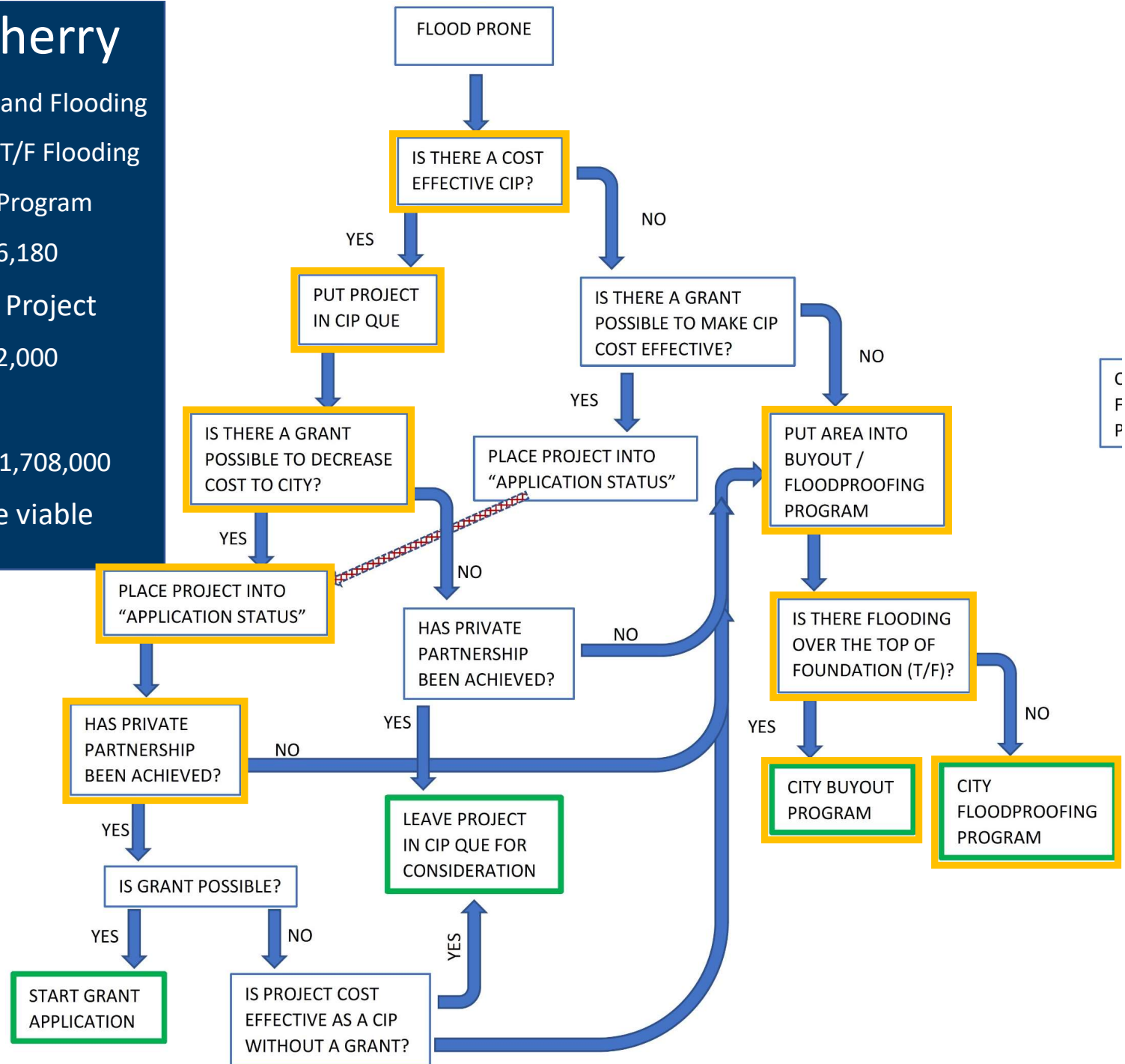
# Harrison / Cherry

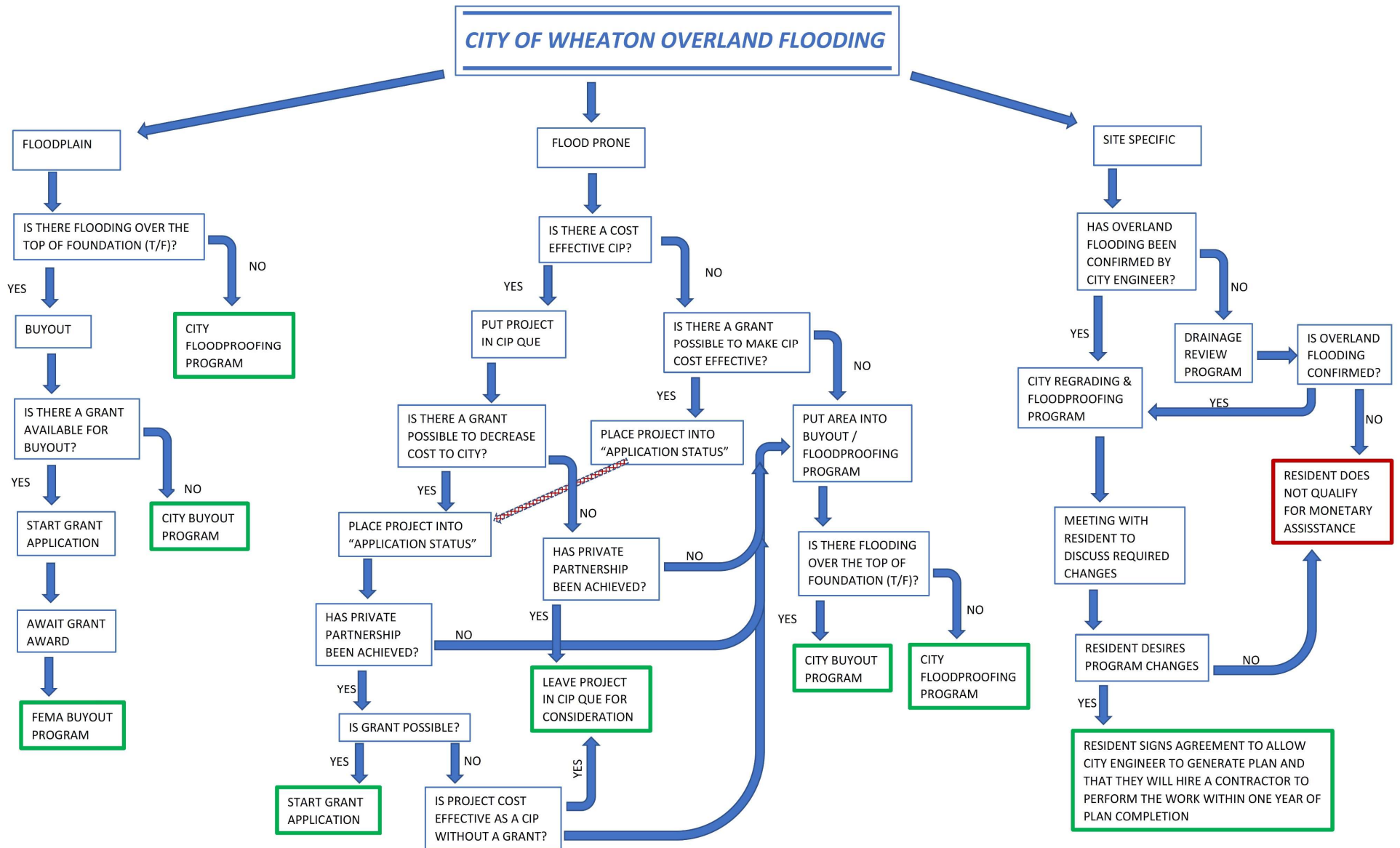
- 44 Homes Receive Overland Flooding
- 26 Homes Receive Over T/F Flooding
- Buyout / Floodproofing Program
  - 100 YEAR = \$9,456,180
- Capital Improvement Project
  - 100 YEAR = \$6,832,000
  - Grant Possible
  - CIP w/ GRANT = \$1,708,000
- Project might not be viable

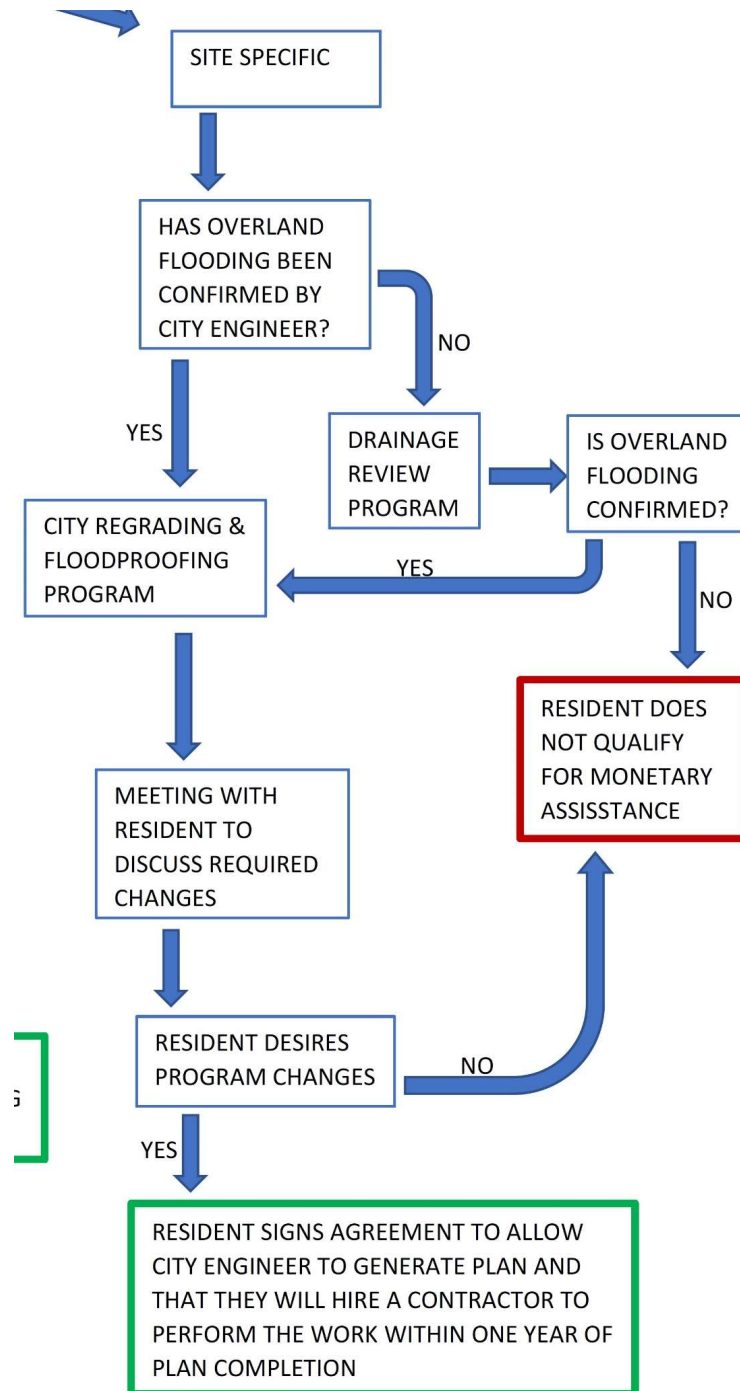


# Harrison / Cherry

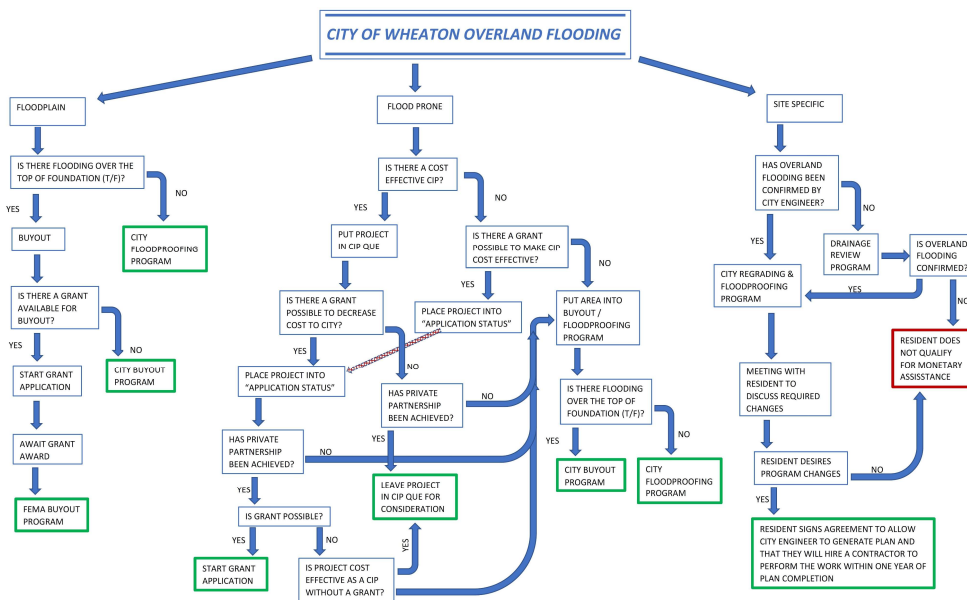
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  - 100 YEAR = \$9,456,180
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  - CIP w/ GRANT = \$1,708,000
- Project might not be viable







# Stormwater Decision Solution Framework



## Cyclical Analysis Problem

1) Need decisions to figure out:

A) Total Cost of Program

B) Grant Possibility

C) Ability to Complete CIP

D) Storm Frequency of Program

2) Which changes decisions made in #1



# Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and  
Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING														
Legend		OVER TOP OF FOUNDATION / NOT OVER TOP OF FOUNDATION											Overland Total (100 Yr)	
		2 Year		5 Year		10 Year		25 Year		50 Year		100 Year		
		Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF		Not Over TF
	Briarcliffe Lakes	0	0	0	0	4	8	18	13	23	16	29	13	42
	Cherry Street	0	0	0	6	2	6	6	4	9	4	12	7	19
	Dorset Drive	0	0	0	0	0	0	0	2	0	4	0	5	5
	Ridge Park	0	0	0	0	0	0	0	0	0	0	0	0	N/A
	Erie Street	1	0	1	0	1	3	3	4	7	4	7	6	13
	Glendale Avenue	0	0	0	0	0	0	2	1	2	1	2	1	3
	Harrison Avenue	0	0	2	6	7	7	8	8	10	11	14	11	25
	Jefferson Avenue	0	0	0	0	2	3	2	3	3	3	4	2	6
	Madison Avenue	0	0	0	0	0	0	0	0	0	0	0	0	N/A
	Mayo Avenue	0	0	0	0	0	0	0	4	0	5	1	10	11
	Pershing East	1	2	2	6	2	8	3	11	7	18	10	23	33
	Pershing West	0	0	1	1	1	1	1	1	1	5	2	4	6
	Delles - Prairie Path Park	0	0	0	0	0	0	0	0	2	1	5	1	6
	Thomas and Summit	0	0	0	0	1	2	1	2	2	3	5	3	8
	Turf, Countryside, & Ranch	0	0	1	0	2	0	2	0	3	5	7	7	14
	TCR Localized	0	0	0	0	0	9	0	10	0	11	0	12	12
	Wakeman & Cadillac	0	0	0	0	0	0	0	0	1	4	6	4	10
	Williston Basin	0	0	1	7	1	11	9	13	11	20	14	22	36
	SubTotal	2	2	8	26	23	58	55	76	81	115	118	131	
	Total	4		34		81		131		196		249		

FLOODPLAIN OVERLAND FLOODING													
Legend	OVER TOP OF FOUNDATION / NOT OVER TOP OF FOUNDATION												Overland Total (100 Yr)
	2 Year		5 Year		10 Year		25 Year		50 Year		100 Year		
	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	
FLOODPLAIN	0	0	0	0	2	2	7	5	24	17	35	34	69



# Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and  
Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING														
BUYOUT / FLOODPROOFING PROGRAM COSTS		OVER TOP OF FOUNDATION / NOT OVER TOP OF FOUNDATION												Overland Total (100 Yr)
		2 Year		5 Year		10 Year		25 Year		50 Year		100 Year		
		Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	Over TF	Not Over TF	
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2	Cherry Street	\$0	\$0	\$0	\$60,000	\$444,540	\$60,000	\$1,551,120	\$40,000	\$2,526,315	\$40,000	\$3,825,390	\$70,000	\$3,895,390
3	Dorset Drive	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000	\$0	\$40,000	\$0	\$50,000	\$50,000
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	N/A
5	Erie Street	\$256,605	\$0	\$256,605	\$0	\$256,605	\$30,000	\$726,735	\$40,000	\$1,608,615	\$40,000	\$1,608,615	\$60,000	\$1,668,615
6	Glendale Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$915,060	\$10,000	\$915,060	\$10,000	\$915,060	\$10,000	\$925,060
7	Harrison Avenue	\$0	\$0	\$727,710	\$60,000	\$2,868,465	\$70,000	\$3,154,860	\$80,000	\$3,831,480	\$110,000	\$5,450,790	\$110,000	\$5,560,790
8	Jefferson Avenue	\$0	\$0	\$0	\$0	\$1,395,270	\$30,000	\$1,395,270	\$30,000	\$1,782,075	\$30,000	\$2,194,860	\$20,000	\$2,214,860
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	N/A
10	Mayo Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$40,000	\$0	\$50,000	\$398,505	\$100,000	\$498,505
11	Pershing East	\$327,705	\$20,000	\$622,560	\$60,000	\$622,560	\$80,000	\$857,415	\$110,000	\$2,073,525	\$180,000	\$2,928,300	\$230,000	\$3,158,300
12	Pershing West	\$0	\$0	\$220,845	\$10,000	\$220,845	\$10,000	\$220,845	\$10,000	\$220,845	\$50,000	\$427,440	\$40,000	\$467,440
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17	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$248,505	\$40,000	\$1,763,010	\$40,000	\$1,803,010
	Williston Basin	\$0	\$0	\$312,945	\$70,000	\$312,945	\$110,000	\$2,506,305	\$130,000	\$3,267,225	\$200,000	\$4,017,630	\$220,000	\$4,237,630
	SubTotal	\$584,310	\$20,000	\$2,427,960	\$260,000	\$8,360,565	\$580,000	\$18,304,665	\$760,000	\$26,804,829	\$1,150,000	\$39,492,564	\$1,310,000	
	Total	\$604,310		\$2,687,960		\$8,940,565		\$19,064,665		\$27,954,829		\$40,802,564		

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FLOODPLAIN		\$0	\$0	\$0	\$0	\$1,000,560	\$20,000	\$2,430,990	\$50,000	\$7,890,750	\$170,000	\$11,664,090	\$340,000	\$12,004,090
	Total	\$0		\$0		\$1,020,560		\$2,480,990		\$8,060,750		\$12,004,090		

# Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and  
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10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735
15	Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845
15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564



# Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and  
Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING								
		CUMULATIVE BUYOUT / FLOODPROOFING COST						CIP COST
Legend		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	
1	Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239	\$11,530,000
2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,897,500
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745
15	Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845	\$1,267,558
15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000	\$120,000
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010	\$2,235,094
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000
SubTotal		\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564	

# Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and  
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		CUMULATIVE BUYOUT / FLOODPROOFING COST						CIP COST	
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2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)	
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000		\$374,400
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0		\$0
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615		\$1,897,500
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060		\$132,600
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180	\$6,832,000
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860		\$2,600,000
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0		\$0
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505		\$537,000
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300		\$3,642,240
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440		\$2,827,500
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145		\$1,153,550
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15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000		\$120,000
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010		\$2,235,094
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630		\$10,000,000
SubTotal		\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564		



# Stormwater Decision Solution Framework

## 100 YEAR STORM PROGRAM COST



### FLOODPLAIN

Buyout / Floodproofing

\$12,004,090

### FLOOD PRONE AREAS

Buyout / Floodproofing / CIP

\$35,727,042

### SITE SPECIFIC AREAS

Floodproofing / Regrading

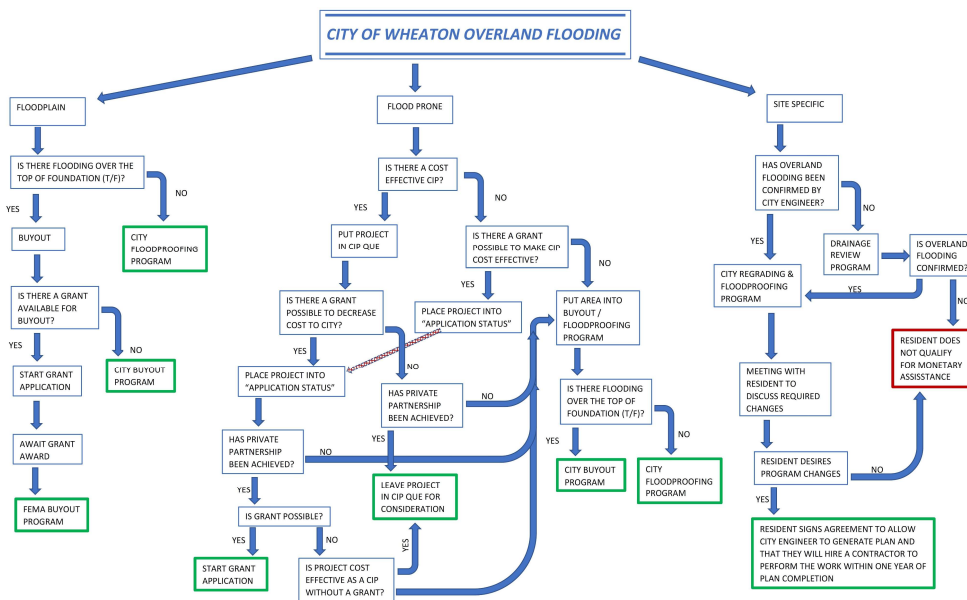
\$1,450,000

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Total

\$49,181,132

# Stormwater Decision Solution Framework



## Cyclical Analysis Problem

1) Need decisions to figure out:

A) Total Cost of Program

B) Grant Possibility

C) Ability to Complete CIP

D) Storm Frequency of Program

2) Which changes decisions made in #1

# Stormwater Decision Solution Framework

Total Cost of Program : Hinges on Top of Foundation and  
Not Top of Foundation Overland Flooding



FLOODPRONE OVERLAND FLOODING									
		CUMULATIVE BUYOUT / FLOODPROOFING COST						CIP COST	FEMA GRANT
	Legend	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year		
1	Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239	\$11,530,000	
2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)	
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400	93,600
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,897,500	
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600	33,150
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180	1,708,000
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000	
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000	134,250
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240	910,560
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500	
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550	
14	Thomas and Summit	\$0	\$0	\$300,545	\$300,545	\$572,790	\$2,055,735	\$3,858,745	
15	Turf, Countryside, & Ranch	\$0	\$287,295	\$547,260	\$547,260	\$858,335	\$1,982,845	\$1,267,558	316,890
15	TCR Localized	\$0	\$0	\$90,000	\$100,000	\$110,000	\$120,000	\$120,000	
16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010	\$2,235,094	
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000	
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564		



# Stormwater Decision Solution Framework

## 100 YEAR STORM PROGRAM COST



### FLOODPLAIN

Buyout / Floodproofing

\$12,004,090

### FLOOD PRONE AREAS

Buyout / Floodproofing / CIP

\$35,727,042

### SITE SPECIFIC AREAS

Floodproofing / Regrading

\$1,450,000

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Total

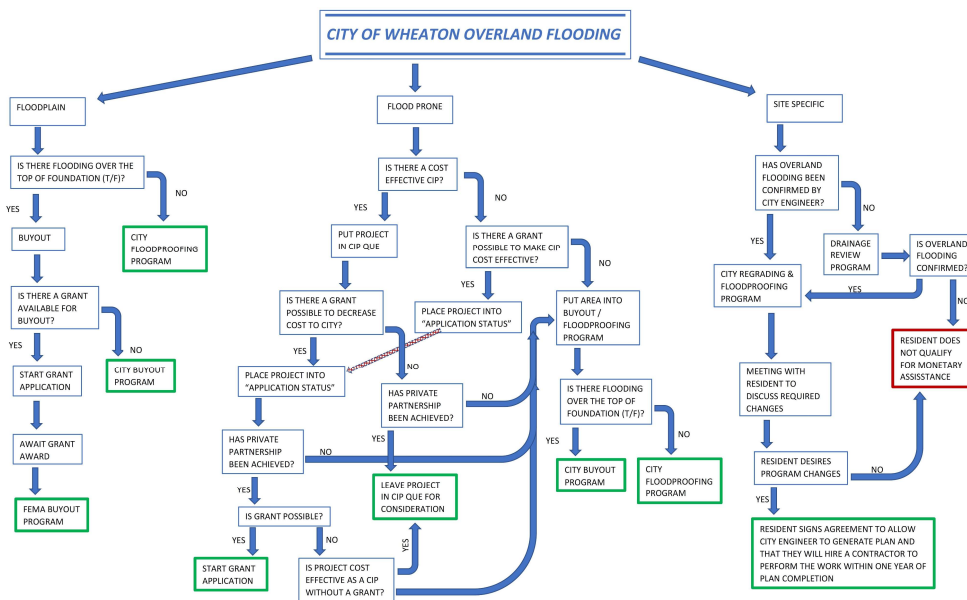
\$49,181,132



Total with Grants

\$37,005,102

# Stormwater Decision Solution Framework



## Cyclical Analysis Problem

1) Need decisions to figure out:

A) Total Cost of Program

B) Grant Possibility

C) Ability to Complete CIP

D) Storm Frequency of Program

2) Which changes decisions made in #1

# Stormwater Decision Solution Framework

## ABILITY TO COMPLETE CIP



# NOT COMPLETED YET

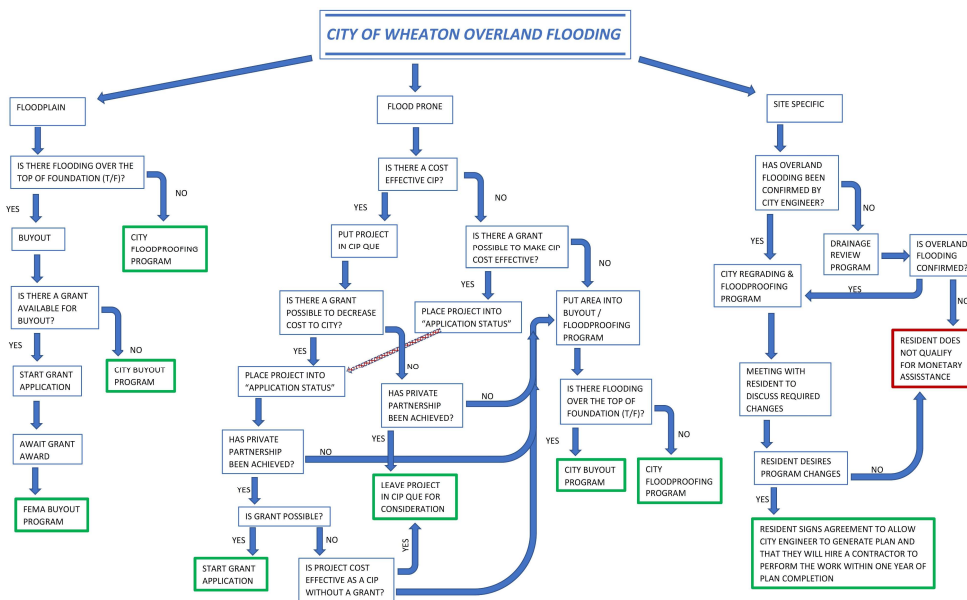


Adds in some variability  
in final estimates  
IF CIP CANNOT BE DONE:  
100 Year +5 Million  
50 Year +800k  
25 Year +800k

## Requires Resident Meetings



# Stormwater Decision Solution Framework



## Cyclical Analysis Problem

1) Need decisions to figure out:

A) Total Cost of Program

B) Grant Possibility

C) Ability to Complete CIP

D) Storm Frequency of Program

2) Which changes decisions made in #1

# Stormwater Decision Solution Framework

## STORM FREQUENCY



### TOTAL PROGRAM COST ESTIMATE

(Floodplain, Flood Prone, & Site Specific Combined)

	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Total without Grants	\$2,054,310	\$4,137,960	\$11,411,125	\$22,203,195	\$36,663,469	\$49,181,132
Total with Grants	\$2,054,310	\$4,137,960	\$7,774,600	\$19,256,007	\$26,930,851	\$37,005,102

# Stormwater Decision Solution Framework

## 100 YEAR STORM FREQUENCY



FLOODPRONE OVERLAND FLOODING									
		CUMULATIVE BUYOUT / FLOODPROOFING COST						CIP COST	FEMA GRANT
	Legend	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year		
1	Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239	\$11,530,000	
2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)	
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000	\$374,400	93,600
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615	\$1,897,500	
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060	\$132,600	33,150
7	Harrison Avenue	\$0	\$787,710	\$2,938,465	\$3,234,860	\$3,941,480	\$5,560,790	\$9,456,180	1,708,000
8	Jefferson Avenue	\$0	\$0	\$1,425,270	\$1,425,270	\$1,812,075	\$2,214,860	\$2,600,000	
9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
10	Mayo Avenue	\$0	\$0	\$0	\$40,000	\$50,000	\$498,505	\$537,000	134,250
11	Pershing East	\$347,705	\$682,560	\$702,560	\$967,415	\$2,253,525	\$3,158,300	\$3,642,240	910,560
12	Pershing West	\$0	\$230,845	\$230,845	\$230,845	\$270,845	\$467,440	\$2,827,500	
13	Delles - Prairie Path Park	\$0	\$0	\$0	\$0	\$1,163,200	\$2,097,145	\$1,153,550	
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16	Wakeman & Cadillac	\$0	\$0	\$0	\$0	\$288,505	\$1,803,010	\$2,235,094	
17	Williston Basin	\$0	\$382,945	\$422,945	\$2,636,305	\$3,467,225	\$4,237,630	\$10,000,000	
	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564		



# Stormwater Decision Solution Framework

## 25 YEAR STORM FREQUENCY



FLOODPRONE OVERLAND FLOODING									
		CUMULATIVE BUYOUT / FLOODPROOFING COST						CIP COST	FEMA GRANT
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1	Briarcliffe Lakes	\$0	\$0	\$1,491,530	\$6,279,250	\$7,986,859	\$10,067,239		\$11,530,000
2	Cherry Street	\$0	\$60,000	\$504,540	\$1,591,120	\$2,566,315	\$3,895,390	(See Harrison)	
3	Dorset Drive	\$0	\$0	\$0	\$20,000	\$40,000	\$50,000		\$374,400
4	Ridge Park	\$0	\$0	\$0	\$0	\$0	\$0		\$0
5	Erie Street	\$256,605	\$256,605	\$286,605	\$766,735	\$1,648,615	\$1,668,615		\$1,897,500
6	Glendale Avenue	\$0	\$0	\$0	\$925,060	\$925,060	\$925,060		\$132,600
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9	Madison Avenue	\$0	\$0	\$0	\$0	\$0	\$0		\$0
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	SubTotal	\$604,310	\$2,687,960	\$8,940,565	\$19,064,665	\$27,954,829	\$40,802,564		

# Stormwater Decision Solution Framework

## STORM FREQUENCY



### TOTAL PROGRAM COST ESTIMATE

(Floodplain, Flood Prone, & Site Specific Combined)

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# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## Next Steps

- 1) The Storm Frequency of the Flood Protection Program
- 2) Evaluation of Ancillary Benefits of CIP Projects

CIP PROJECTS : MOVE WATER AWAY FROM STRUCTURES

DON'T LEAVE STRUCTURES IN THE INUNDATION AREAS

MAKE STREETS MORE PASSABLE DURING FLOODS

DON'T ELIMINATE NEIGHBORHOODS & TAX BASE

NONE OF THESE  
BENEFITS ARE TAKEN  
INTO ACCOUNT AS OF YET

- 3) Evaluation of how City will fund Flood Protection Program





# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## Recommendations

### 1) The Storm Frequency of the Flood Protection Program

- CONTINUE EVALUATION OF BASED ON PREVIOUS CITY COUNCIL DIRECTION OF 100 YEAR STORM LEVEL



# CITY OF WHEATON

# FLOOD RESILIENCY INVESTIGATION

## Recommendations

### 2) Evaluation of Ancillary Benefits of CIP Projects

- STAFF PREPARES A PRESENTATION TO DEPICT EACH FLOOD PRONE AREA AS A BUYOUT/FLOODPROOFING SOLUTION vs. CIP PROJECT SOLUTION
- PURPOSE WOULD BE FOR COUNCIL TO SEE THE SPECIFIC RESULTS OF BOTH SOLUTIONS AND THEN BE ABLE TO DETERMINE WHETHER THE ANCILLARY BENEFITS OF CIP PROJECTS OUTWEIGH ANY ADDITIONAL CIP COSTS.



# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## Recommendations

- 3) Evaluation of how City will fund Flood Protection Program
- PRESENTATION ON FUNDING MECHANISMS





# CITY OF WHEATON FLOOD RESILIENCY INVESTIGATION

## Flood Protection Program Discussion Part 4

Joseph Tebrugge – Director of Engineering

Kris Dunn – Project Engineer Stormwater

Department of Engineering

February 22, 2021

THANK YOU  
ANY QUESTIONS?

