

## WILLISTON BASIN DRAINAGE STUDY



**PROJECT SITE:**

**Williston Street at Evergreen Street  
Wheaton, DuPage County, Illinois**

**PREPARED FOR:**

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# EXECUTIVE SUMMARY

The Williston Street Basin (Williston Basin) is located in the City of Wheaton (City) between Chase Street and Summit Street immediately north of Roosevelt Road (IL-38). This area is a fully developed residential section of the City and lacks modern stormwater management infrastructure. The Williston Basin contains several poorly drained depressed areas which have contributed to recurring structure, street, and yard flooding during significant rainfall events.

In 2012, V3 Companies, Ltd. (V3) created an XP-SWMM hydrologic and hydraulic model of the existing Williston Basin and identified at-risk structures for design storms up to the 100-year recurrence interval. This study enhances the 2012 analysis to identify at-risk structures for design storms up to the 500-year recurrence interval and presents improvement alternatives to reduce the risk of future flooding within the Williston Basin.

V3 developed seven concept level improvement alternatives and evaluated each for constructability, Engineer's Opinion of Probable Construction Cost (EOPCC), and flood reduction effectiveness. Improvements were designed to address larger flooding problem areas on President Street, Kipling Court, Williston Street, and Blanchard Street. Based on XP-SWMM modeling results and EOPCC, Alternative 3 is the preferred alternative. A summary of the proposed alternatives is provided in Table 1-1.

Alternative		Level of Protection				EOPCC
ID	Description	President	Kipling	Williston	Blanchard	
		(DEP 5)	(DEP 6)	(DEP 7)	(DEP 10)	
Existing	Existing Conditions	<5-yr			--	
1	Pershing & Elm Alternative 1	<5-yr	5-yr	25-yr	5-yr	\$0
2	Pershing & Elm Alternative 1 + Conveyance	100-yr	5-yr	25-yr	10-yr	\$3.3M
3	Flood Storage	100-yr	50-yr	25-yr	50-yr	\$6.0M
4	Pershing & Elm Alternative 1 + Flood Storage	100-yr	100-yr	100-yr	50-yr	\$6.0M
5	Pershing & Elm Alternative 1 + Conveyance + Flood Storage	100-yr			\$9.0M	
6	Buyout Only	100-yr			\$11.3M	
7	Floodproofing	100-yr			\$1.8M	

TABLE 1-1 SUMMARY OF ALTERNATIVES

# CHAPTER 1 INTRODUCTION

The Williston Basin is located in the City of Wheaton between Chase Street and Summit Street immediately north of Roosevelt Road (IL-38) as shown in Figure 1 below and on Exhibit 1. There is no mapped floodplain or floodway within the study area as shown on the Flood Insurance Rate Map (FIRM) and DuPage County Regulatory Flood Map (RFM) provided as Exhibits 2 and 3, respectively. This area is a fully developed residential section of the City and lacks modern stormwater management infrastructure. The Williston Basin contains several poorly drained depressed areas which have contributed to recurring structure, street, and yard flooding during significant rainfall events.



FIGURE 1 LOCATION MAP

In 2012, V3 developed an XP-SWMM hydrologic and hydraulic model of the existing Williston Basin and identified at-risk structures for design storms up to the 100-year recurrence interval. The purpose of this study is to enhance the 2012 XP-SWMM analysis to identify at-risk structures for design storms up to the 500-year recurrence interval and to design proposed improvement alternatives to reduce the risk of future flooding within the Williston Basin.

# CHAPTER 2 EXISTING CONDITIONS

This section summarizes the enhanced existing conditions hydrologic and hydraulic analysis of the watershed.

## 2.1 XP-SWMM ANALYSIS

The V3 2012 existing conditions XP-SWMM hydrologic and hydraulic model of the Williston Basin was enhanced to determine peak critical duration Water Surface Elevations (WSEL) for the 500-year return interval storm event. A summary of tasks performed is provided below. Existing conditions hydrology is shown on Exhibit 4 and the XP-SWMM model is provided electronically in Appendix 6.

### 2.1.1 *Hydrologic Input Data*

A 500-year, 24-hour rainfall depth was determined by extrapolating Bulletin 71 sectional rainfall depths out to the 500-year return interval using a log-log scale plot. Rainfall depths for the 1-, 2-, 3-, 6-, 12-, and 18-hour durations were calculated by applying average ratios to the 24-hour rainfall depth as prescribed in Bulletin 71, Section 1, Table 3. Supporting calculations are provided in Appendix 1.

### 2.1.2 *Model Results*

The 500-year rainfall depths were entered into the existing conditions XP-SWMM model and the critical duration WSEL for each depression was calculated. The 500-year WSEL inundation boundary was delineated on DuPage County 2-foot contour aerial topography as shown on Exhibit 5.

V3 obtained supplemental low entry survey of 100 structures located within the delineated 500-year inundation boundary and determined that 54 of the 100 structures have low entry elevations below the calculated peak 500-year WSEL. Existing conditions at-risk structures are shown on Exhibit 6.

Supporting calculations and supplemental low entry survey data are provided in Appendix 1. The existing conditions XP-SWMM results are summarized in Table 2-1.

Depression ID	5-yr		10-yr		25-yr		50-yr		100-yr		500-yr	
	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk
1	768.8	0	770.2	0	771.9	0	772.6	0	772.7	0	772.8	0
2	768.5	0	770.1	0	772.0	0	772.7	1	772.9	1	773.0	2
3	768.6	0	768.8	0	769.2	1	769.5	1	769.8	1	770.9	1
4	770.1	0	770.4	0	770.7	0	771.0	0	771.3	0	772.0	1
5	763.9	1	764.0	2	764.1	3	764.2	3	764.3	3	764.7	3
6	758.1	6	758.6	8	759.4	9	760.0	11	760.5	11	761.6	19
7	757.9	0	758.6	1	759.4	5	760.0	9	760.5	10	761.6	13
8	759.6	0	759.9	0	759.9	0	760.0	0	760.5	0	761.6	1
9	760.4	0	761.0	0	761.7	0	762.2	0	762.8	0	763.5	1
10	761.2	1	761.8	1	762.5	4	763.1	6	763.7	10	764.8	13
<b>TOTAL AT-RISK</b>	<b>8</b>		<b>12</b>		<b>22</b>		<b>31</b>		<b>36</b>		<b>54</b>	

Note: Shading indicates level of protection. No shading indicates <5-yr level of protection.

TABLE 2-1 EXISTING CONDITIONS XP-SWMM RESULTS

# CHAPTER 3 PROPOSED CONDITIONS

This section presents the proposed conditions hydrologic and hydraulic analysis of the watershed.

## 3.1 DESIGN CRITERIA

Proposed improvement projects were developed to a concept level only and evaluated for design storms up to the 100-year recurrence interval. Model results for the 500-year recurrence interval are provided in Appendix 2 for reference. Constructability and cost to implement were considered for each alternative. Items such as utility coordination, evaluation of environmental impacts, and geotechnical engineering are not included in this analysis and should be part of a future phase of study.

Specific design parameters include:

- Bulletin 70 sectional rainfall depths paired with Huff rainfall distributions.
- Proposed storm sewer designed to provide adequate cover for anticipated land use.
- Maximum 4:1 side slope for steeply graded areas.
- Flood storage basins planted with native vegetation.
- Inlet capacity was not explicitly evaluated as part of the concept level analysis. This should be investigated during the engineering design phase.
- Improvement alternatives were evaluated based on level of protection. Level of protection is defined as the design storm event at which zero at-risk structures have a low entry elevation below the calculated peak WSEL of the adjacent depression.
- The majority of at-risk structures are located at Depressions 5, 6, 7, and 10. Existing stormwater management infrastructure provides less than a 5-year level of protection for adjacent structures. Proposed infrastructure improvement alternatives targeted lowered WSEL at these depressions and were not designed to address isolated at-risk structures adjacent to Depressions 2, 3, and 4.
- Primary structures at 515 Kipling Court, 510 Williston Street, and 514 Williston Street were purchased by DuPage County Stormwater using Federal Emergency Management Agency (FEMA) funds. The parcels are deed restricted to be maintained as open space in perpetuity. Therefore, these three structures have been removed from the at-risk tabulation and no stormwater improvement projects are proposed on the vacant lots.

## 3.2 ALTERNATIVES ANALYSIS

V3 developed seven concept level improvement alternatives to reduce the risk of future flooding based on the existing conditions XP-SWMM results. Alternatives 1 through 5 were input into the XP-SWMM model and evaluated for the critical duration 5-year through 500-year recurrence interval storm events. Alternatives 6 and 7 serve as a comparison for total project cost. An EOPCC was prepared for each proposed alternative. Supporting calculations are provided in



Appendix 2, assessor data is provided in Appendix 3, detailed EOPCC are provided in Appendix 4, floodproofing example projects are provided in Appendix 5, and XP-SWMM models are provided electronically in Appendix 6.

### 3.2.1 Alternative 1 – Pershing & Elm Alternative 1 Improvements

Alternative 1 includes construction of the Pershing & Elm Study Area Alternative 1 improvements as presented in the 2018 V3 study. No additional improvements within the Williston Basin are proposed. A schematic of Alternative 1 is provided as Exhibit 7 and XP-SWMM model results are presented in Table 3-1.

Depression ID	5-yr		10-yr		25-yr		50-yr		100-yr		500-yr	
	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk
<b>WILLISTON BASIN</b>												
1	768.8	0	770.2	0	771.9	0	772.6	0	772.7	0	772.8	0
2	768.4	0	770.0	0	772.0	0	772.7	1	772.9	1	773.0	2
3	768.6	0	768.9	0	769.2	1	769.5	1	769.9	1	770.9	1
4	770.1	0	770.4	0	770.7	0	771.0	0	771.4	0	772.0	1
5	763.9	1	764.0	2	764.1	3	764.2	3	764.3	3	764.5	3
6	756.3	0	757.4	2	758.3	7	758.9	9	759.6	9	760.9	12
7	757.6	0	757.8	0	758.2	0	758.9	1	759.6	6	760.9	12
8	759.2	0	759.7	0	759.9	0	759.9	0	760.0	0	760.9	0
9	759.5	0	760.5	0	761.4	0	762.1	0	762.7	0	763.5	1
10	760.7	0	761.6	1	762.4	3	763.0	6	763.6	10	764.8	12
<b>TOTAL AT-RISK</b>	<b>1</b>		<b>5</b>		<b>14</b>		<b>21</b>		<b>30</b>		<b>44</b>	
<b>PERSHING &amp; ELM</b>												
D	752.3	0	754.3	0	756.9	0	757.7	0	758.5	0	759.8	3
E	752.4	0	754.3	0	756.6	0	757.4	0	758.0	1	759.7	10
F	752.6	0	753.6	0	756.2	0	757.7	1	758.4	4	759.2	11
G	751.8	0	752.3	0	753.8	0	755.3	0	756.5	0	757.7	1
H	749.7	0	750.2	0	751.3	0	752.1	0	753.8	0	755.5	1
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>0</b>		<b>0</b>		<b>1</b>		<b>5</b>		<b>26</b>	

Note: Shading indicates level of protection. No shading indicates <5-yr level of protection.

TABLE 3-1 ALTERNATIVE 1 XP-SWMM RESULTS

XP-SWMM results show less than a 5-year level of protection at Depression 5, a 5-year level of protection at Depressions 6 and 10, and a 25-year level of protection at Depression 7. The peak 100-year WSEL at Depressions 6 and 7 is lowered by approximately 1-foot from existing conditions. In this alternative, 6 additional homes are

protected from the 100-year flood event within the Williston Basin area. The EOPCC for Alternative 1 improvements is \$0.

### 3.2.2 Alternative 2 – Alternative 1 + Conveyance Improvements

Alternative 2 includes Alternative 1 improvements plus the addition of a new 48-inch diameter storm sewer outlet from the Williston Basin heading south on President Street. The trunk storm sewer line on Evergreen Street and several branch storm sewer lines are proposed to be upsized to convey additional stormwater runoff to the new outlet. Backflow preventers are proposed to be installed on the Kipling Court and Williston Street storm sewer lines. A schematic of Alternative 2 is provided as Exhibit 8 and XP-SWMM model results are presented in Table 3-2.

Depression ID	5-yr		10-yr		25-yr		50-yr		100-yr		500-yr	
	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk
<b>WILLISTON BASIN</b>												
1	768.6	0	770.2	0	771.9	0	772.6	0	772.7	0	772.8	0
2	768.4	0	770.0	0	771.9	0	772.6	1	772.8	1	773.0	2
3	768.5	0	768.8	0	769.2	1	769.5	1	769.8	1	770.9	1
4	770.1	0	770.3	0	770.7	0	771.0	0	771.3	0	772.0	1
5	757.7	0	760.8	0	761.6	0	762.1	0	762.7	0	764.0	2
6	754.5	0	757.1	2	758.2	7	758.8	9	759.5	9	760.8	12
7	755.0	0	756.8	0	758.1	0	758.8	1	759.5	6	760.8	12
8	758.5	0	759.2	0	759.9	0	759.9	0	760.0	0	760.8	0
9	755.7	0	759.2	0	760.6	0	761.2	0	761.9	0	763.2	1
10	756.1	0	760.0	0	761.4	1	762.2	3	762.8	4	764.1	11
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>2</b>		<b>9</b>		<b>15</b>		<b>21</b>		<b>42</b>	
<b>PERSHING &amp; ELM</b>												
D	752.9	0	755.4	0	757.3	0	758.0	0	758.7	1	759.8	3
E	753.1	0	755.1	0	757.2	0	757.8	1	758.4	1	759.8	11
F	752.4	0	753.5	0	756.2	0	757.7	1	758.3	4	759.3	2
G	751.7	0	752.3	0	753.8	0	755.2	0	756.5	0	757.7	1
H	749.6	0	750.3	0	751.3	0	752.4	0	753.7	0	755.6	1
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>0</b>		<b>0</b>		<b>2</b>		<b>6</b>		<b>18</b>	

Note: Shading indicates level of protection. No shading indicates <5-yr level of protection.

**TABLE 3-2 ALTERNATIVE 2 XP-SWMM RESULTS**

XP-SWMM model results show a 100-year level of protection at Depression 5, a 5-year level of protection at Depression 6, a 25-year level of protection at Depression 7, and a 10-year level of protection at Depression 10. However, the addition of a new 48-inch



diameter outlet pipe from the Williston Basin raises peak WSEL within the Pershing & Elm study area and decreases anticipated benefits at Depressions D and F. Three structures within the Pershing & Elm Study Area that were removed from the 100-year inundation boundary under Alternative 1 have low entry elevations below the calculated peak 100-year WSEL under Alternative 2. The improvements proposed in Alternative 2 protect an additional 15 structures from the 100-year flooding event within the Williston basin. The EOPCC for Alternative 2 improvements is approximately \$3.3M.

### 3.2.3 Alternative 3 – Structure Buyout + New Flood Storage

Alternative 3 includes the buyout and demolition of 9 residential structures adjacent to Depression 6 and 4 residential structures adjacent to Depression 10. A total of 7.9 ac-ft and 1.5 ac-ft of new flood storage is proposed to be created on the vacated parcels at Depression 6 and Depression 10, respectively, for a total of 9.4 ac-ft of new flood storage volume within the Williston Basin. The outlet from the excavated storage basins at Depression 6 is lowered to 750.0 feet which is just above the surveyed invert elevation of the 48-inch diameter trunk storm sewer line on Evergreen Street. Backflow preventers are proposed to be installed on the Kipling Court and Williston Street storm sewer lines. Alternative 3 assumes that no proposed stormwater improvement projects have been constructed in the Pershing & Elm Study Area. A schematic of Alternative 3 is provided as Exhibit 9 and XP-SWMM model results are presented in Table 3-3.

Depression ID	5-yr		10-yr		25-yr		50-yr		100-yr		500-yr	
	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk	WSEL	# at risk
<b>WILLISTON BASIN</b>												
1	768.6	0	770.2	0	771.9	0	772.6	0	772.7	0	772.8	0
2	768.4	0	770.0	0	771.9	0	772.6	1	772.8	1	773.0	2
3	768.5	0	768.8	0	769.2	1	769.5	1	769.8	1	770.9	1
4	770.1	0	770.3	0	770.7	0	771.0	0	771.3	0	772.0	1
5	758.2	0	759.6	0	761.5	0	762.5	0	763.0	0	764.1	3
6	753.0	0	755.7	0	758.1	0	759.1	0	759.9	2	760.8	3
7	757.7	0	757.8	0	758.1	0	759.1	3	759.9	9	760.8	12
8	759.0	0	759.6	0	759.9	0	759.9	0	760.0	0	760.8	0
9	758.7	0	759.6	0	760.5	0	761.3	0	762.0	0	763.4	1
10	759.4	0	760.5	0	761.5	0	762.3	0	763.0	2	764.5	8
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>0</b>		<b>1</b>		<b>5</b>		<b>15</b>		<b>31</b>	
<b>PERSHING &amp; ELM</b>												
D	758.9	2	759.2	2	759.4	3	759.6	3	759.8	3	760.2	3
E	756.6	0	757.3	0	757.9	0	758.6	1	759.3	7	760.2	11
F	758.3	4	758.6	5	758.9	6	759.1	8	759.3	12	759.9	12
G	757.5	1	757.6	1	757.7	1	757.8	3	757.9	5	758.4	5
H	754.6	0	755.2	0	755.7	1	755.8	1	756.0	2	756.4	2
<b>TOTAL AT-RISK</b>	<b>7</b>		<b>8</b>		<b>11</b>		<b>16</b>		<b>29</b>		<b>33</b>	

Note: Shading indicates level of protection. No shading indicates <5-yr level of protection.

**TABLE 3-3 ALTERNATIVE 3 XP-SWMM RESULTS**

XP-SWMM model results show a 100-year level of protection at Depression 5, a 50-year level of protection at Depressions 6 and 10, and a 25-year level of protection at Depression 7. Alternative 3 protects an additional 21 structures in the Williston Basin



from the 100-year storm event. The EOPCC for Alternative 3 improvements is approximately \$6.0M.

### 3.2.4 Alternative 4 – Alternative 1 + Alternative 3

Alternative 4 includes both Alternative 1 and Alternative 3 improvements. A schematic of Alternative 4 is provided as Exhibit 10 and XP-SWMM model results are presented in Table 3-4.

Depression ID	5-yr		10-yr		25-yr		50-yr		100-yr		500-yr	
	WSEL	# at risk	WSEL	# at risk								
<b>WILLISTON BASIN</b>												
1	768.6	0	770.2	0	771.9	0	772.6	0	772.7	0	772.8	0
2	768.4	0	770.0	0	771.9	0	772.6	1	772.8	1	773.0	2
3	768.5	0	768.8	0	769.2	1	769.5	1	769.8	1	770.9	1
4	770.1	0	770.3	0	770.7	0	771.0	0	771.3	0	772.0	1
5	757.1	0	758.3	0	761.1	0	762.3	0	762.9	0	764.0	2
6	751.7	0	751.9	0	754.1	0	756.3	0	758.0	0	760.3	2
7	757.4	0	757.7	0	757.9	0	758.0	0	758.1	0	760.3	10
8	758.6	0	759.2	0	759.9	0	759.9	0	760.0	0	760.3	0
9	757.2	0	758.9	0	760.2	0	760.9	0	761.6	0	763.3	1
10	758.1	0	760.0	0	761.4	0	762.2	0	762.9	1	764.4	7
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>0</b>		<b>1</b>		<b>2</b>		<b>3</b>		<b>26</b>	
<b>PERSHING &amp; ELM</b>												
D	751.9	0	753.9	0	756.6	0	757.6	0	758.3	0	759.7	3
E	752.1	0	753.9	0	756.2	0	757.1	0	757.7	0	759.5	8
F	752.5	0	753.5	0	755.9	0	757.6	1	758.3	4	759.2	11
G	751.7	0	752.3	0	753.7	0	755.2	0	756.5	0	757.7	1
H	749.6	0	750.2	0	752.1	0	752.1	0	753.0	0	755.5	1
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>0</b>		<b>0</b>		<b>1</b>		<b>4</b>		<b>24</b>	

Note: Shading indicates level of protection. No shading indicates <5-yr level of protection.

TABLE 3-4 ALTERNATIVE 4 XP-SWMM RESULTS

XP-SWMM model results show a 100-year level of protection at Depressions 5, 6, and 7 and a 50-year level of protection at Depression 10. Anticipated benefits in the Pershing & Elm Study Area are shown to be slightly improved from Alternative 1. Alternative 4 protects an additional 33 structures in the Williston Basin from the 100-year storm event. The EOPCC for Alternative 4 improvements is approximately \$6.0M.



### 3.2.5 Alternative 5 – Alternative 2 + Alternative 3

Alternative 5 includes both Alternative 2 and Alternative 3 improvements. A schematic of Alternative 5 is provided as Exhibit 11 and XP-SWMM model results are presented in Table 3-5.

Depression ID	5-yr		10-yr		25-yr		50-yr		100-yr		500-yr	
	WSEL	# at risk	WSEL	# at risk								
<b>WILLISTON BASIN</b>												
1	768.6	0	770.2	0	771.9	0	772.6	0	772.7	0	772.8	0
2	768.4	0	770.0	0	771.9	0	772.6	1	772.8	1	773.0	2
3	768.5	0	768.8	0	769.2	1	769.5	1	769.8	1	770.9	1
4	770.1	0	770.3	0	770.7	0	771.0	0	771.3	0	772.0	1
5	757.2	0	760.5	0	761.5	0	762.0	0	762.5	0	764.0	2
6	751.6	0	751.9	0	754.0	0	756.5	0	758.2	0	760.4	2
7	754.4	0	756.2	0	757.1	0	757.6	0	758.2	0	760.4	10
8	758.4	0	759.0	0	759.6	0	759.9	0	760.0	0	760.4	0
9	755.1	0	757.2	0	759.2	0	760.1	0	760.8	0	762.6	1
10	755.6	0	757.8	0	760.1	0	761.1	0	762.0	0	763.6	6
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>0</b>		<b>1</b>		<b>2</b>		<b>2</b>		<b>25</b>	
<b>PERSHING &amp; ELM</b>												
D	752.5	0	754.8	0	757.0	0	757.7	0	758.3	0	759.7	3
E	752.7	0	754.8	0	756.7	0	757.2	0	757.6	0	759.4	7
F	752.4	0	753.3	0	755.9	0	757.5	0	758.3	4	759.2	11
G	751.7	0	752.2	0	753.7	0	755.2	0	756.4	0	757.7	1
H	749.6	0	750.2	0	751.2	0	752.1	0	753.4	0	755.6	1
<b>TOTAL AT-RISK</b>	<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>4</b>		<b>23</b>	

Note: Shading indicates level of protection. No shading indicates <5-yr level of protection.

TABLE 3-5 ALTERNATIVE 5 XP-SWMM RESULTS

XP-SWMM results show a 100-year level of protection at Depressions 5, 6, 7, and 10. Anticipated benefits in the Pershing & Elm Study Area are shown to be slightly improved from Alternative 1. In the Williston Basin area, a total of 34 additional structures are protected in the 100-year storm event. The EOPCC for Alternative 5 improvements is approximately \$9.0M.



### *3.2.6 Alternative 6 – Structure Buyout*

Alternative 6 includes buyout of all “at-risk” structures within the Williston Basin up to the 100-year storm event. Current assessed property values were obtained from the Milton Township assessor’s website and used to estimate the cost to purchase each structure. Demolition, abatement, and legal costs were estimated at approximately \$40,000 per structure. The EOPCC for Alternative 6 is approximately \$11.3M.

### *3.2.7 Alternative 7 – Floodproofing*

Floodproofing can be an effective way to reduce the risk of future structure flooding in an area where an infrastructure project is not feasible or for structures with low entry elevations that may fall just below the benefit level of a particular project. However, this method may be more difficult to implement due to the structure specific nature of the improvements, the need for additional data collection outside the scope of this study, and constructability challenges on privately owned property.

Isolated structures within the Williston Basin adjacent to Depressions 2, 3, and 4 may be candidates for floodproofing due to the low benefit-cost ratio of an infrastructure project targeted to these areas. Floodproofing may also be a viable option to reduce flooding risk for structures with low entry elevations that remain below the proposed 100-year flood elevation of infrastructure improvement alternatives presented in Chapter 3.2. Cost share options may be implemented by the City to encourage resident participation in floodproofing programs.

Examples of floodproofing projects are provided in Appendix 5.

Floodproofing 36 homes would cost approximately \$1.8M. If this alternative was chosen, a more detailed investigation would need to be completed to determine the specific floodproofing measures required for each structure. Appendix 4 provides detailed information about alternatives for floodproofing structures. Based on the depth of flooding and the source of the low entry, the following floodproofing measures shown in Table 3-6 appear feasible.



Address	Top of Foundation Elevation (or FF if TF not available)	Low Entry Elevation (max of LPE and adjacent ground)	Existing Depth of 100-year WSEL Above Top of Foundation Elevation	Existing Depth of 100-year WSEL Above Low Entry Elevation	Location of Low Entry	Potential Floodproofing Remedy
710 Evergreen St	774.22	772.56		0.29	Window Sill	Raised Window Wells
804 E Indiana St	769.08	772.34	0.70		Window Well	Elevate Structure
507 S President St	767.26	764		0.28	Window Sill	Raised Window Wells
511 S President St	767.89	764.02		0.26	Window Sill	Raised Window Wells
511 S President St	767.89	763.71		0.57	Window Sill	Raised Window Wells
515 S President St	768.45	763.97		0.31	Window Sill	Raised Window Wells
515 S President St	768.45	763.96		0.32	Window Sill	Raised Window Wells
515 S President St	768.45	764.17		0.11	Window Sill	Raised Window Wells
515 S President St	768.45	764.11		0.17	Window Sill	Raised Window Wells
511 Kipling Ct	760.74	759.71		0.80	Door	Removable Flood Shield (for door)
519 Kipling Ct	759.13	758.46	1.38	2.05	Window Sill	Elevate Structure
519 Kipling Ct	759.13	759.19	1.38	1.32	Window Sill	
519 Kipling Ct	759.13	759.38	1.38	1.13	Window Sill	
523 Kipling Ct	763.09	760.03		0.48	Window Sill	Raised Window Wells
523 Kipling Ct	763.09	759.79		0.72	Window Sill	Raised Window Wells
529 Kipling Ct	761.03	758.85		1.66	Window Sill	Raised Window Wells
529 Kipling Ct	761.03	758.06		2.45	Window Sill	Raised Window Wells
1103 Evergreen St	761.3	757.97		2.54	Window Sill	Raised Window Wells
1103 Evergreen St	761.3	758.04		2.47	Window Sill	Raised Window Wells
510 Kipling Ct	761.1	759.76		0.75	Door	Removable Flood Shield (for door)
514 Kipling Ct	760.28	758.76	0.23	1.75	Window Sill	Elevate Structure
514 Kipling Ct	760.28	758.82	0.23	1.69	Window Sill	
514 Kipling Ct	760.28	758.17	0.23	2.34	Window Sill	
518 Kipling Ct	759.39	758.39	1.12	2.12	Window Sill	Elevate Structure
518 Kipling Ct	759.39	758.25	1.12	2.26	Window Sill	
518 Kipling Ct	759.39	758.16	1.12	2.35	Window Sill	
518 Kipling Ct	759.39	757.95	1.12	2.56	Window Sill	
522 Kipling Ct	759.12	757.77	1.39	2.74	Window Sill	Elevate Structure
522 Kipling Ct	759.12	757.55	1.39	2.96	Window Sill	
522 Kipling Ct	759.12	757.62	1.39	2.89	Window Sill	
522 Kipling Ct	759.12	757.5	1.39	3.01	Window Sill	Elevate Structure
528 Kipling Ct	758.79	757.08	1.72	3.43	Window Sill	
528 Kipling Ct	758.79	756.93	1.72	3.58	Window Sill	
528 Kipling Ct	758.79	756.78	1.72	3.73	Window Sill	
1015 Evergreen St	759.27	757.68	1.24	2.83	Window Sill	Elevate Structure
1015 Evergreen St	759.27	757.39	1.24	3.12	Window Sill	



1015 Evergreen St	759.27	756.65	1.24	3.86	Window Sill	
423 Williston St	761.95	760.25		0.27	Door	Removable Flood Shield (for door)
506 Williston St	759.21	758.22	1.31	2.30	Window Sill	Elevate Structure
518 Williston St	760.21	759.39	0.31	1.13	Window Well	Elevate Structure
528 Williston St	761.08	760.27		0.25	Window Well	Raised Window Wells
528 Williston St	761.08	759.12		1.40	Door	Removable Flood Shield (for door)
528 Williston St	761.08	760.19		0.33	Window Well	Raised Window Wells
503 Williston St	761.88	759.47		1.05	Window Sill	Raised Window Wells
503 Williston St	761.88	759.46		1.06	Window Sill	Raised Window Wells
503 Williston St	761.88	759.49		1.03	Window Sill	Raised Window Wells
507 Williston St	761.45	759.06		1.46	Window Sill	Raised Window Wells
511 Williston St	762.25	759.64		0.88	Window Sill	Raised Window Wells
515 Williston St	759.25	759.06	1.27	1.46	Window Sill	Elevate Structure
519 Williston St	760.69	759.77		0.75	Window Sill	Elevate Structure
402 Blanchard St	764.04	762.4		1.25	Window Well	Raised Window Wells
402 Blanchard St	764.04	762.4		1.25	Window Well	Raised Window Wells
402 Blanchard St	764.04	762.04		1.61	Window Well	Raised Window Wells
402 Blanchard St	764.04	762.64		1.04	Window Well	Raised Window Wells
406 Blanchard St	763.97	763.01		0.64	Window Well	Raised Window Wells
1402 Illinois St	761.03	0	2.62	0.00	N/A	Elevate Structure
407 Blanchard St	762.95	762.10	0.70	1.55	Window Well	Elevate Structure
402 Summit St	764.67	763.05		0.60	Window Well	Raised Window Wells
402 Summit St	764.67	762.92		0.73	Window Well	Raised Window Wells
402 Summit St	764.67	762.12		0.53	Window Well	Raised Window Wells
402 Summit St	764.67	763.11		0.54	Window Well	Raised Window Wells
408 Summit St	766.46	763.59		0.06	Window Well	Raised Window Wells
408 Summit St	766.46	763.64		0.01	Window Well	Raised Window Wells
412 Summit St	765.83	763.33		0.32	Window Well	Raised Window Wells
412 Summit St	765.83	763.42		0.23	Window Well	Raised Window Wells
412 Summit St	765.83	763.46		0.19	Window Well	Raised Window Wells
412 Summit St	765.83	763.31		0.34	Window Well	Raised Window Wells
416 Summit St	763.93	763.40		0.25	Window Well	Raised Window Wells
416 Summit St	763.93	763.42		0.23	Window Well	Raised Window Wells
416 Summit St	763.93	763.39		0.26	Window Well	Raised Window Wells
416 Summit St	763.93	763.37		0.28	Window Well	Raised Window Wells
322 Blanchard St	763.79	763.31		0.34	Window Well	Raised Window Wells
322 Blanchard St	763.79	763.49		0.16	Window Well	Raised Window Wells
1403 Illinois St	764.2	762.49		1.16	Window Well	Raised Window Wells

TABLE 3-6 ALTERNATIVE 7 STRUCTURE FLOODPROOFING



## CHAPTER 4 CONCLUSIONS

Based on the cost per benefitting structure, the floodproofing alternatives appear most cost effective alternative to fully meet the project goals. However, floodproofing only provides protection to the homes that incorporate floodproofing measures. The proposed engineering alternatives provide many other benefits, including reductions in yard flooding of many properties not identified in the tables, reductions in flood depths on streets, reductions in traffic impacts, reduction in impacts to business operations, improved emergency access, and other similar benefits. The value and need for these ancillary benefits should also be considered when evaluating the different project alternatives.

**Based on the proposed conditions XP-SWMM results, Alternative 3 is the preferred alternative for the Williston Basin.** The addition of flood storage at Depression 6 and Depression 10 paired with conveyance improvements on President Street, Kipling Court, and Williston Street substantially increases the level of protection for adjacent structures. Alternative 3 may be constructed independently of downstream stormwater improvements within the Pershing & Elm study area and provides a minimum 25-year level of protection for all structures. However, should the proposed Pershing & Elm Alternative 1 improvements be constructed in the future, the level of protection in the Williston Basin is anticipated to increase to 100-year at Depressions 5,6, and 7 and 50-year at Depression 10 without the need for modification. The EOPCC for Alternative 3 is \$6.0M which is approximately \$5.3M less than Alternative 6 (buyout of all structures).

Construction of large-scale conveyance improvements proposed as part of Alternatives 2 and 5 are not recommended due to the approximately \$3.3M cost, permitting and construction challenges, and diminished level of protection within the Pershing & Elm study area without new flood storage in the Williston Basin.



APPENDIX 1  
EXISTING CONDITIONS SUPPORTING DATA



V3 Companies  
7325 Janes Avenue  
Woodridge, IL 60517  
(630) 724-9200 phone / (630) 724-9202 fax  
[www.v3co.com](http://www.v3co.com)

	DSGN.	DEV	CHK	
CLIENT CITY OF WHEATON	PROJECT# 12-045.01			
TITLE LOCATION MAP			DATE 08/10/18	
				EXHIBIT 1



National Flood Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'

250 0 500 1000 FEET

**PANEL 0505H**

## **FIRM FLOOD INSURANCE RATE MAP**

DuPAGE COUNTY,  
ILLINOIS  
AND INCORPORATED AREAS

PANEL 0505 OF 1006

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
DuPAGE COUNTY	170197	0505	H
GLEN ELLYN, VILLAGE OF	170207	0505	H
WHEATON, CITY OF	170221	0505	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER  
17043C0505H

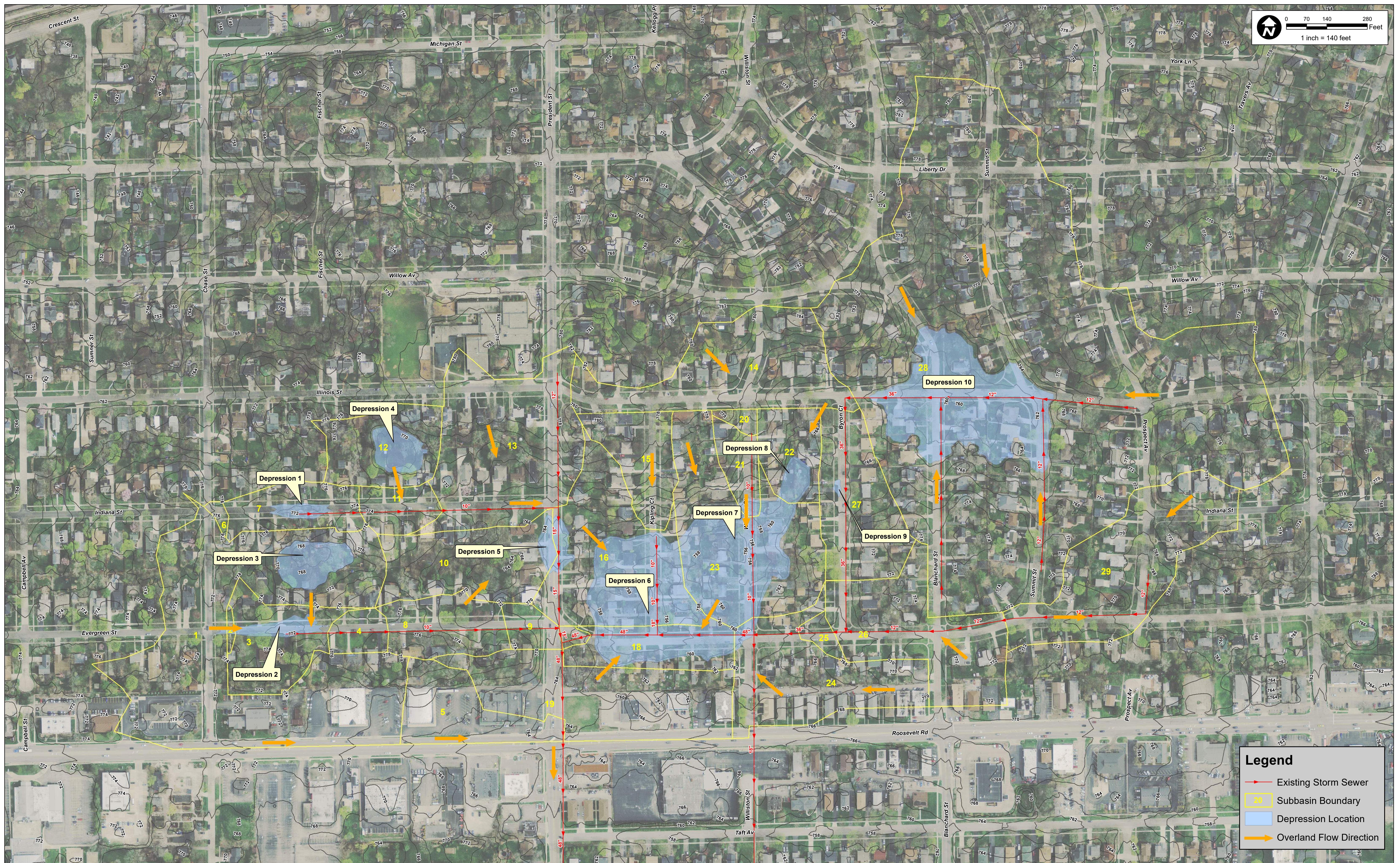
**EFFECTIVE DATE  
DECEMBER 16, 2004**

## Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msfc.fema.gov](http://www.msfc.fema.gov)

## EXHIBIT 2





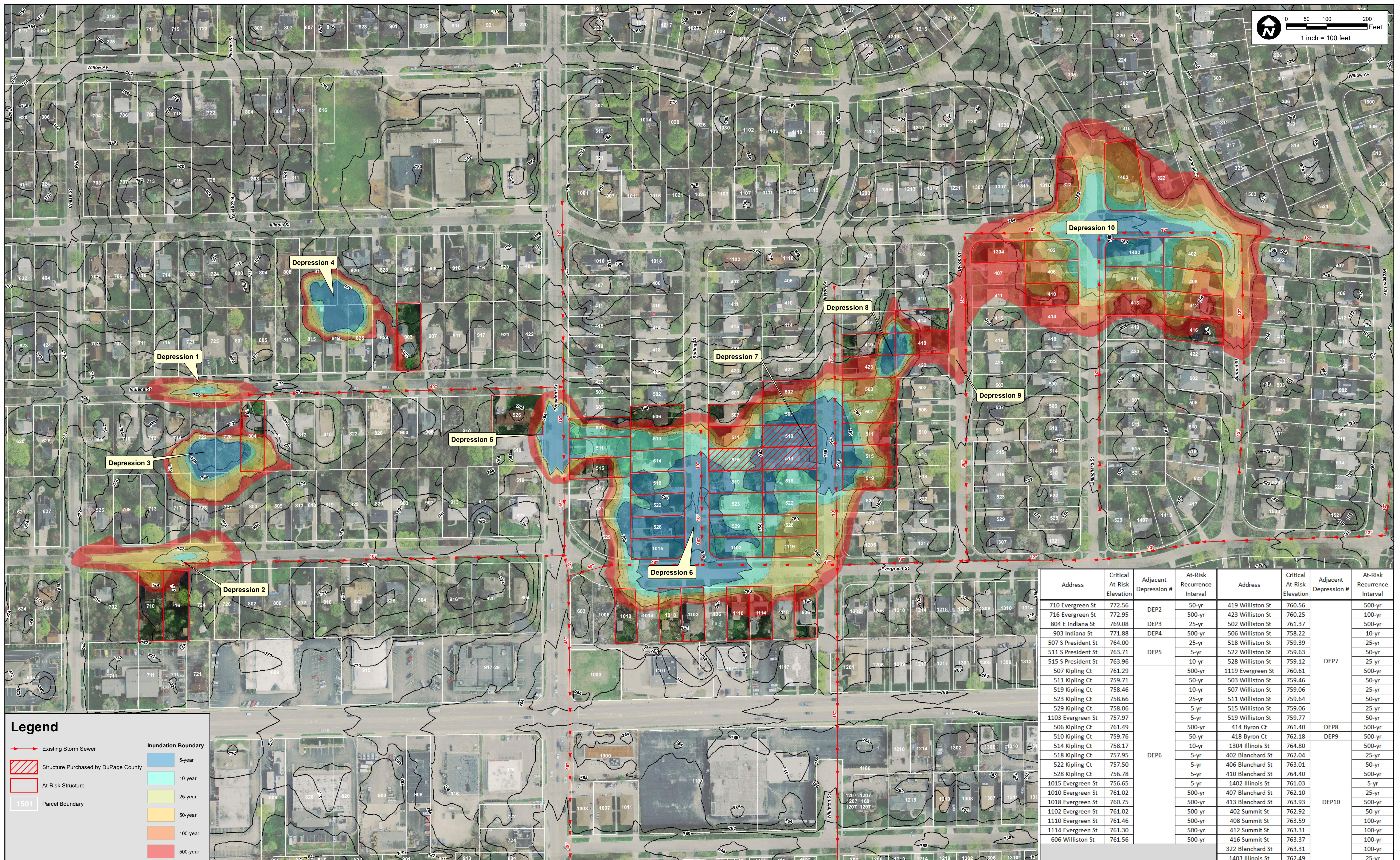
V3 Companies  
7325 Janes Avenue  
Woodridge, IL 60517  
(630) 724-9200 phone / (630) 724-9202 fax  
www.v3co.com

CLIENT  
City of Wheaton

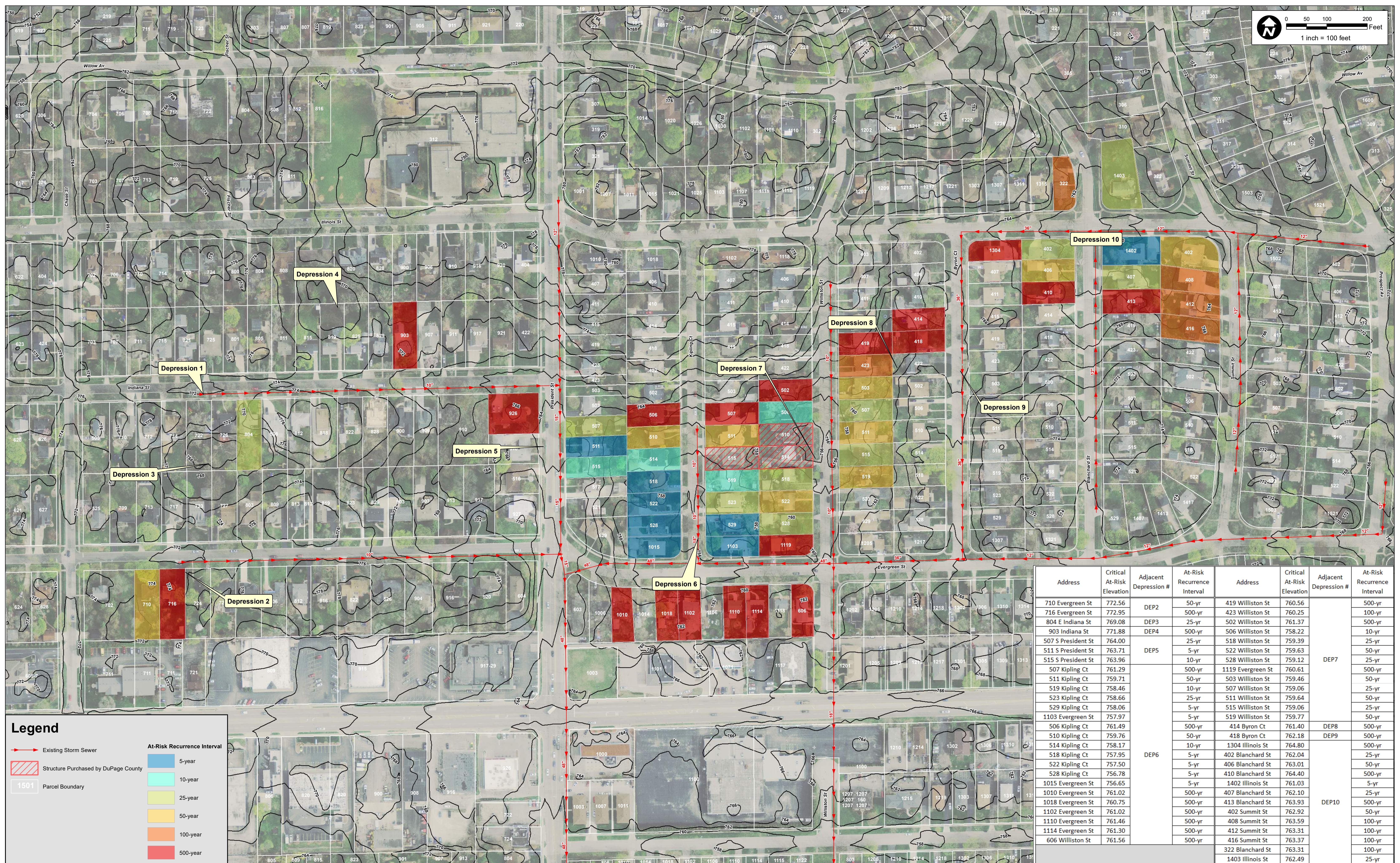
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Existing Conditions Hydrologic Map

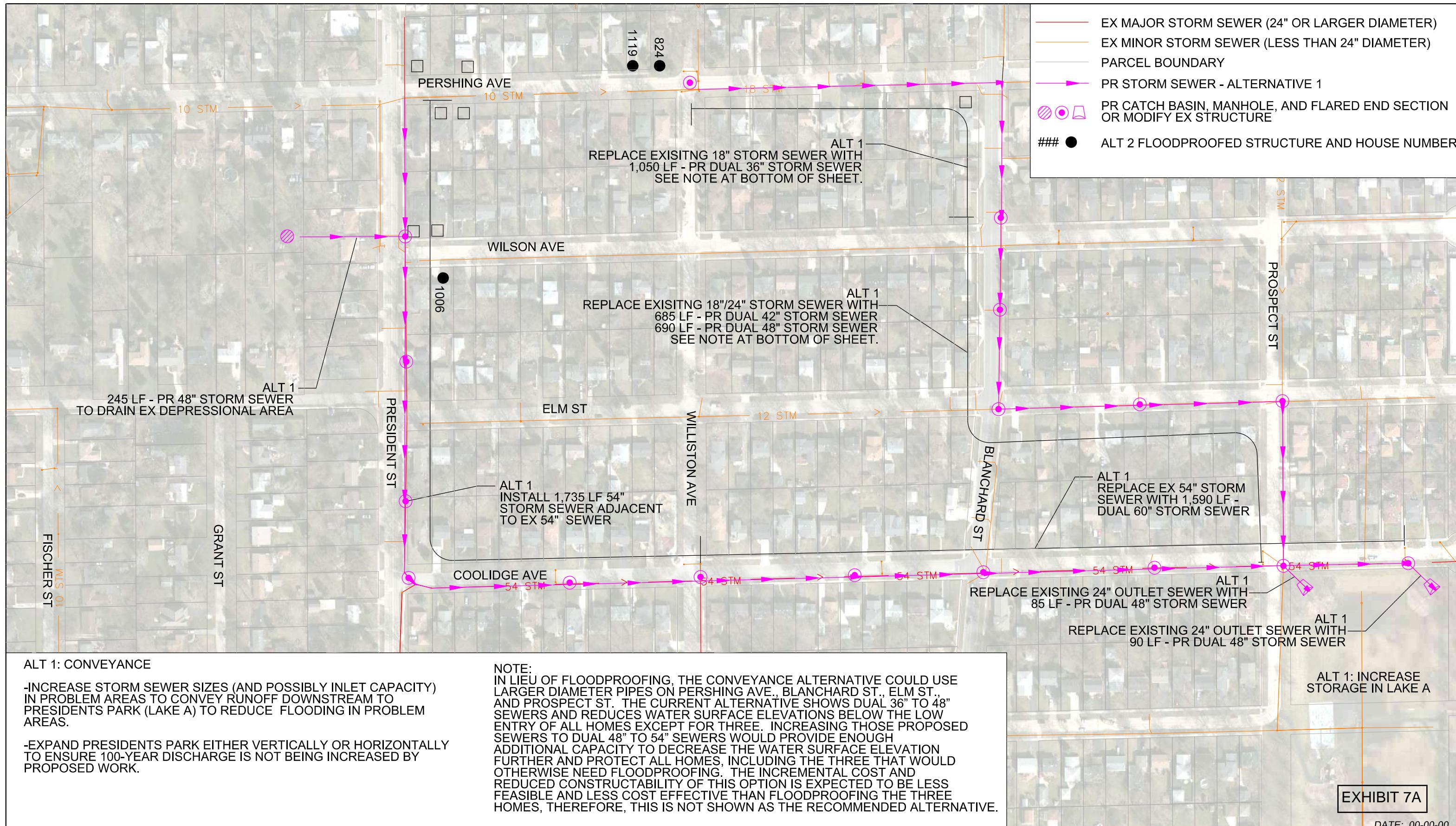
PROJECT#  
12045.01

DESIGN	CHECK
DEV	
08/07/18	EXHIBIT NO. 4



Address	Critical At-Risk Elevation	Adjacent Depression #	At-Risk Recurrence Interval	Address	Critical At-Risk Elevation	Adjacent Depression #	At-Risk Recurrence Interval
710 Evergreen St	772.56	DEP2	50-yr	419 Williston St	760.56	DEP7	500-yr
716 Evergreen St	772.95		500-yr	423 Williston St	760.25		100-yr
804 E Indiana St	769.08	DEP3	25-yr	502 Williston St	761.37		500-yr
903 Indiana St	771.88	DEP4	500-yr	506 Williston St	758.22		10-yr
507 S President St	764.00	DEP5	25-yr	518 Williston St	759.39		25-yr
511 S President St	763.71		5-yr	522 Williston St	759.63		50-yr
515 S President St	763.96		10-yr	528 Williston St	759.12		25-yr
507 Kipling Ct	761.29	DEP6	500-yr	1119 Evergreen St	760.61	DEP8	500-yr
511 Kipling Ct	759.71		50-yr	503 Williston St	759.46		50-yr
519 Kipling Ct	758.46		10-yr	507 Williston St	759.06		25-yr
523 Kipling Ct	758.66		25-yr	511 Williston St	759.64		50-yr
529 Kipling Ct	758.06		5-yr	515 Williston St	759.06		25-yr
1103 Evergreen St	757.97		5-yr	519 Williston St	759.77		50-yr
506 Kipling Ct	761.49		500-yr	414 Byron Ct	761.40		500-yr
510 Kipling Ct	759.76		50-yr	418 Byron Ct	762.18	DEP9	500-yr
514 Kipling Ct	758.17		10-yr	1304 Illinois St	764.80		500-yr
518 Kipling Ct	757.95		5-yr	402 Blanchard St	762.04		25-yr
522 Kipling Ct	757.50		5-yr	406 Blanchard St	763.01		50-yr
528 Kipling Ct	756.78		5-yr	410 Blanchard St	764.40		500-yr
1015 Evergreen St	756.65	DEP10	5-yr	1402 Illinois St	761.03	DEP10	5-yr
1010 Evergreen St	761.02		500-yr	407 Blanchard St	762.10		25-yr
1018 Evergreen St	760.75		500-yr	413 Blanchard St	763.93		500-yr
1102 Evergreen St	761.02		500-yr	402 Summit St	762.92		50-yr
1110 Evergreen St	761.46		500-yr	408 Summit St	763.59		100-yr
1114 Evergreen St	761.30		500-yr	412 Summit St	763.31		100-yr
606 Williston St	761.56		500-yr	416 Summit St	763.37		100-yr
				322 Blanchard St	763.31		100-yr
				1403 Illinois St	762.49		25-yr





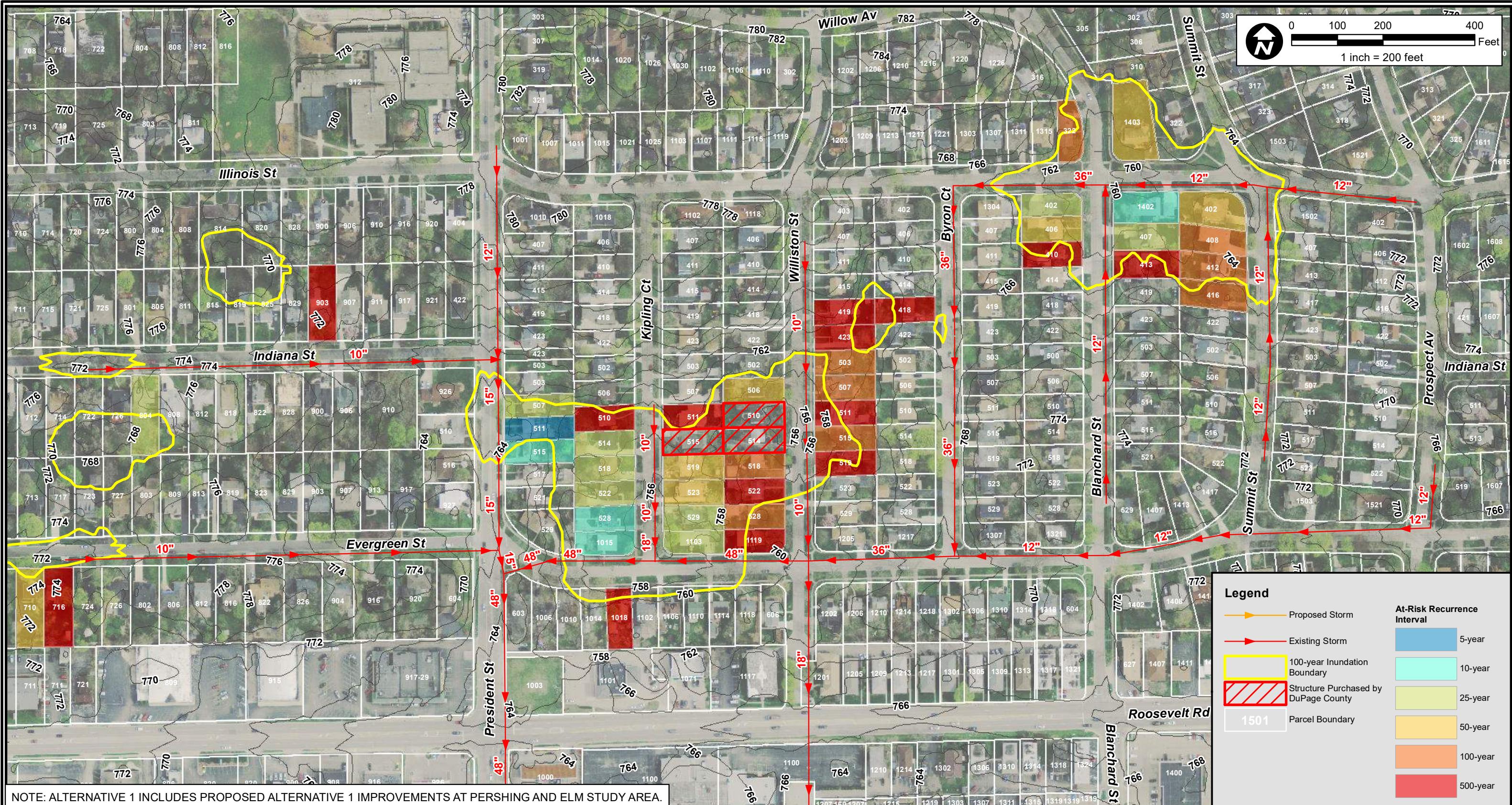
V3 Companies  
7325 Janes Avenue  
Woodridge, IL 60517  
630.724.9200 phone  
630.724.9202 fax  
www.v3co.com

PERSHING/ELM FLOOD PRONE AREA STUDY  
WHEATON

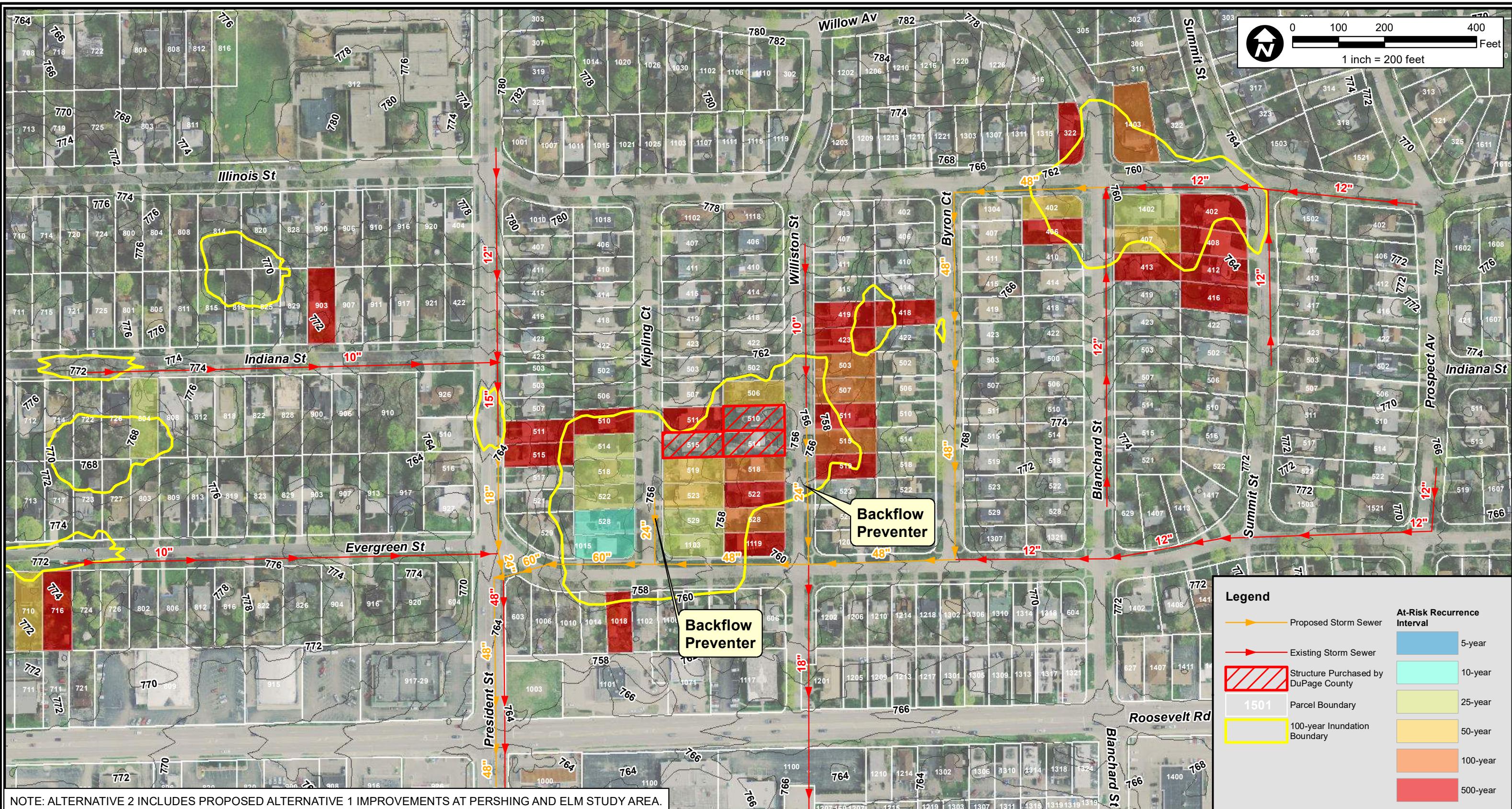
PERSHING/ELM EAST AREA  
PROPOSED ALTERNATIVE 1 EXHIBIT

ILLINOIS

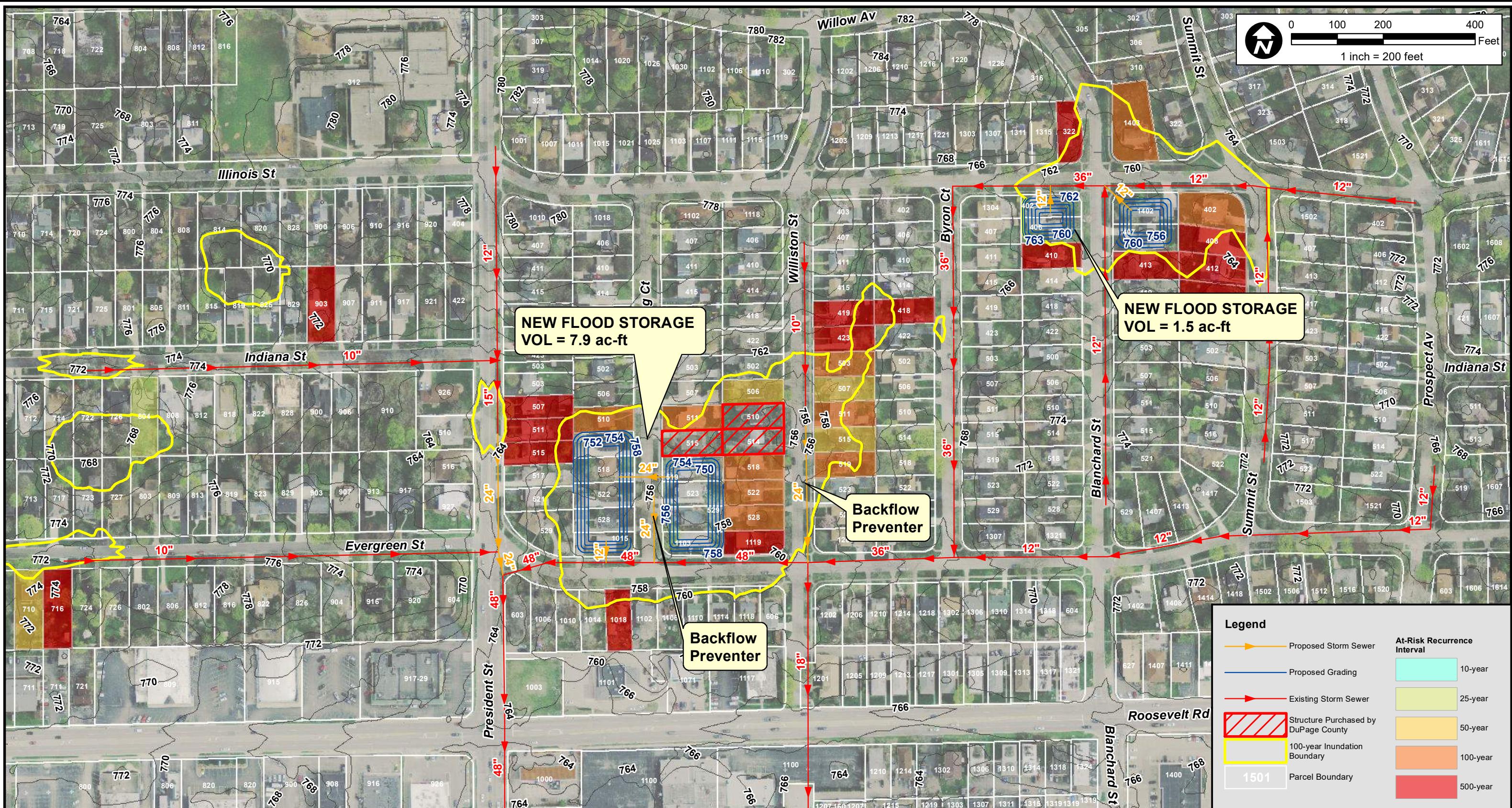


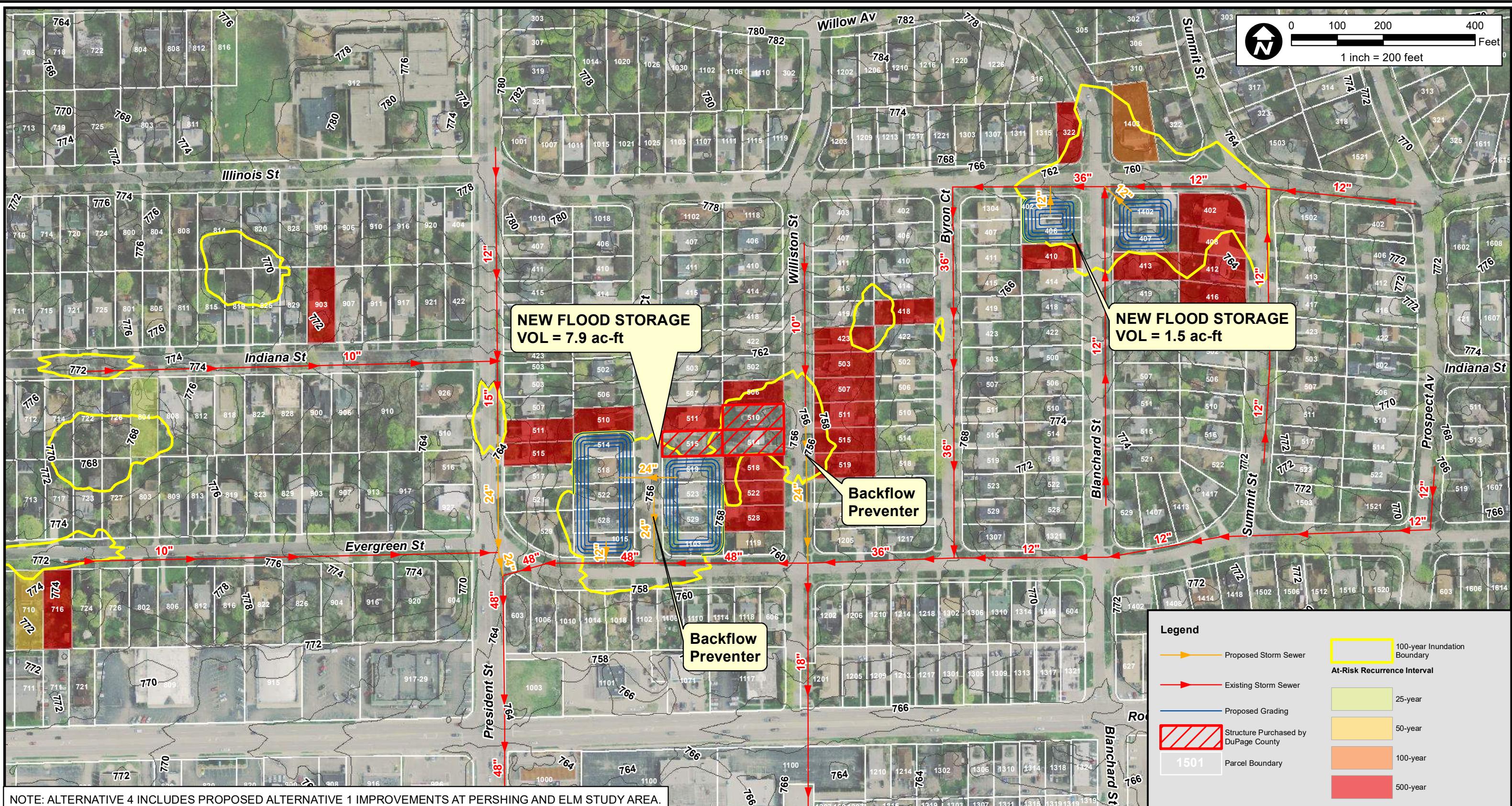


CLIENT	PROJECT#	DESIGN		CHECK
TITLE	12045.01	ISSUE DATE		EXHIBIT NO.
		09/13/18		
V3 Companies 7325 Janes Avenue Woodridge, IL 60517 (630) 724-9200 phone / (630) 724-9202 fax www.v3co.com	City of Wheaton Proposed Alternative 1			7B

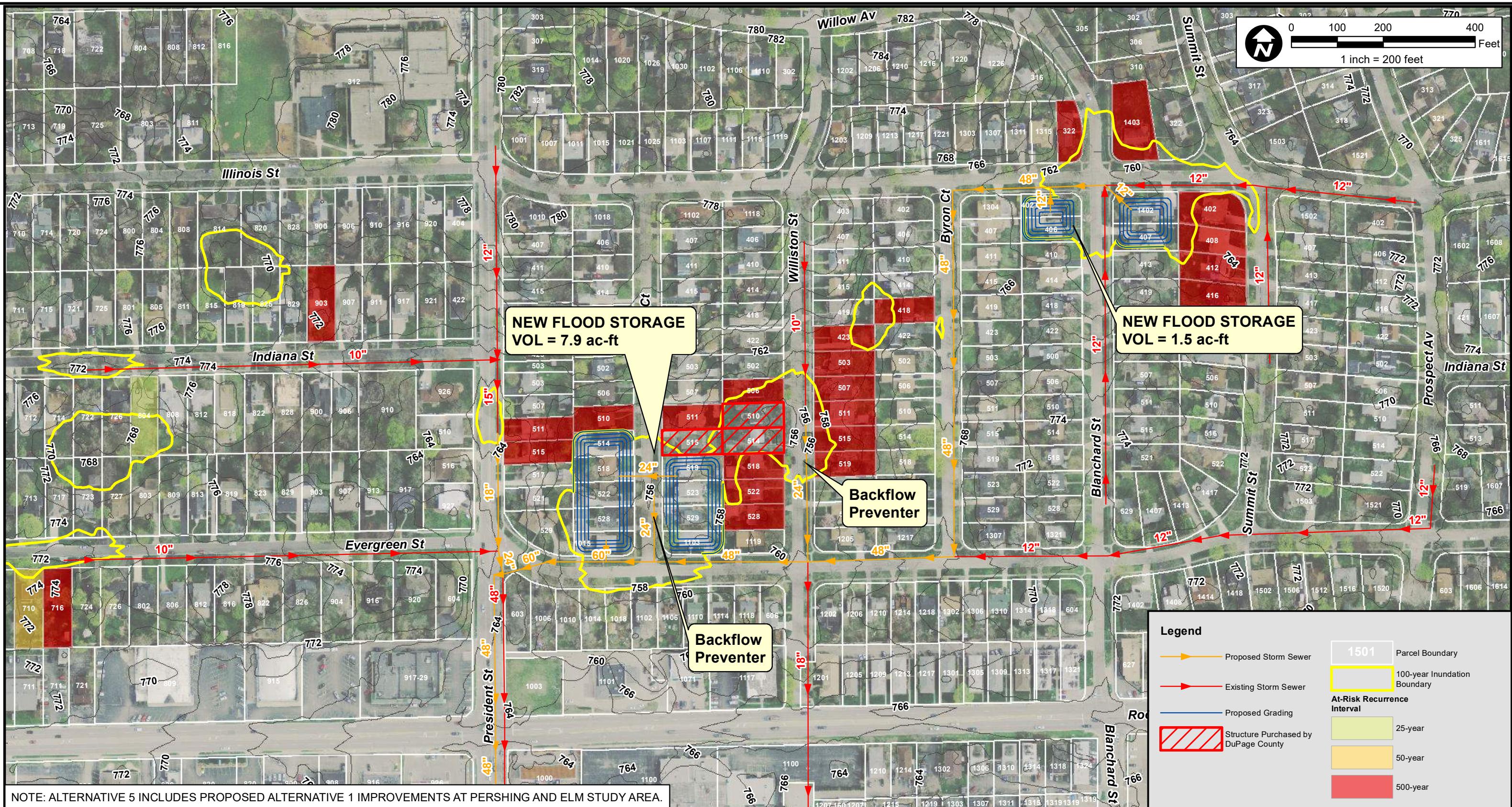


CLIENT	PROJECT#	DESIGN		CHECK
TITLE	12045.01			EXHIBIT NO.
V3 Companies 7325 Janes Avenue Woodridge, IL 60517 (630) 724-9200 phone / (630) 724-9202 fax www.v3co.com	City of Wheaton Proposed Alternative 2			09/13/18 8





CLIENT	PROJECT#	DESIGN		CHECK
 <p>V3 Companies 7325 Janes Avenue Woodridge, IL 60517 (630) 724-9200 phone / (630) 724-9202 fax www.v3co.com</p>	12045.01			EXHIBIT NO.
Proposed Alternative 4		09/13/18		



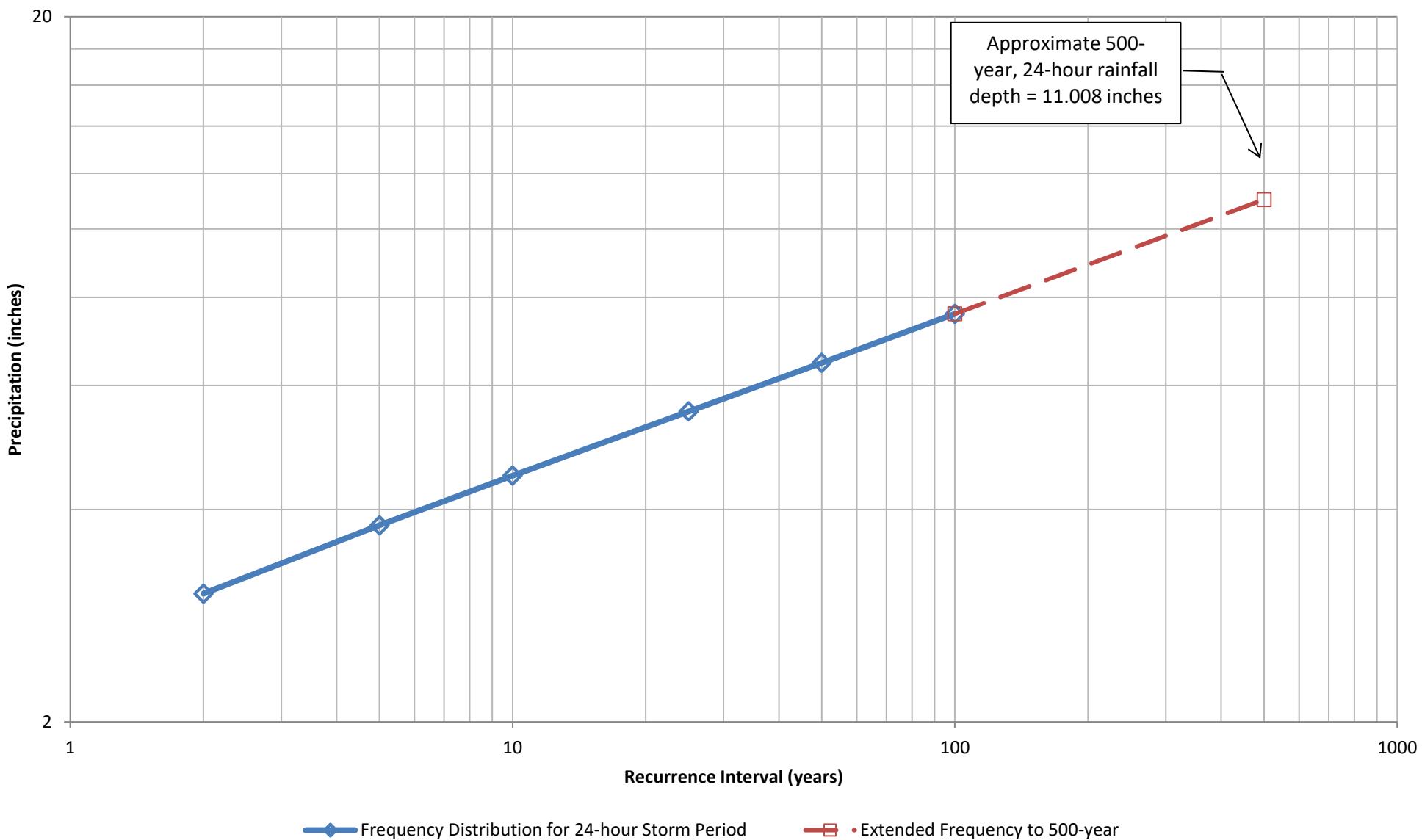
CLIENT	PROJECT#	DESIGN		CHECK
 <p>V3 Companies 7325 Janes Avenue Woodridge, IL 60517 (630) 724-9200 phone / (630) 724-9202 fax www.v3co.com</p>	12045.01			EXHIBIT NO.
Proposed Alternative 5		09/13/18		

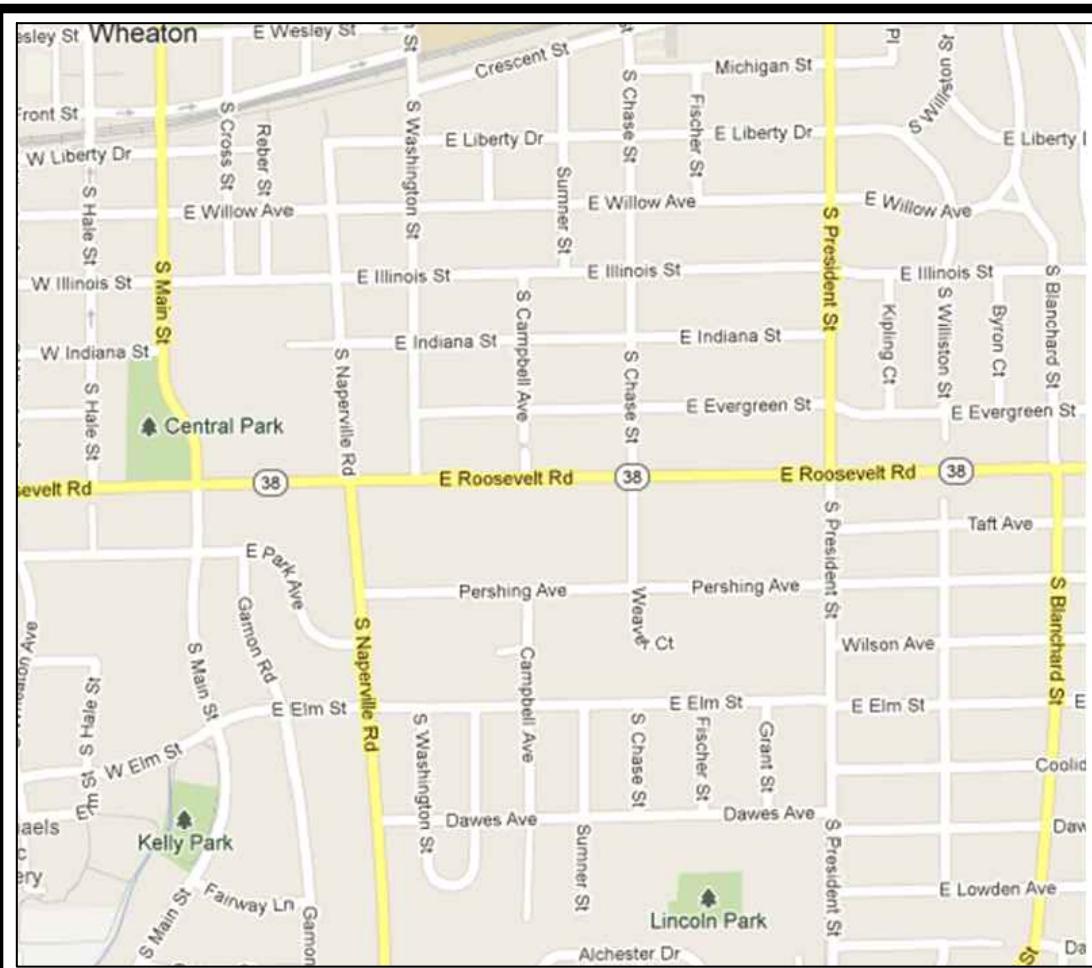
**WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY**  
**EXISTING CONDITIONS AT-RISK STRUCTURE TABLE**

Address	Critical At-Risk Elevation	Adjacent XPSWMM ID	Critical Duration Water Surface Elevation (ft)						(Yes/No)	Recurrence Interval
			5-Year	10-Year	25-Year	50-Year	100-Year	500-Year		
710 Evergreen St	772.56	DEP2	768.47	770.13	772.01	772.68	772.85	773.01	Y	50-Year
716 Evergreen St	772.95								Y	500-Year
723 Evergreen St	773.40								N	--
727 Evergreen St	773.39								N	--
714 E Indiana St	773.77	DEP3	768.56	768.84	769.21	769.49	769.78	770.94	N	--
722 E Indiana St	771.12								N	--
726 E Indiana St	771.47								N	--
804 E Indiana St	769.08								Y	25-Year
812 E Indiana St	775.73								N	--
818 E Indiana St	777.06								N	--
829 Indiana St	772.00								N	--
808 Illinois St	773.80	DEP4	770.12	770.38	770.74	771.04	771.34	771.97	N	--
814 Illinois St	773.80								N	--
820 Illinois St	775.22								N	--
815 Indiana St	774.04								N	--
819 Indiana St	772.53								N	--
825 Indiana St	772.56								N	--
903 Indiana St	771.88								Y	500-Year
507 S President St	764.00	DEP5	763.89	763.98	764.10	764.19	764.28	764.65	Y	25-Year
926 E Indiana St	764.61								N	--
510 S President St	766.25								N	--
511 S President St	763.71								Y	5-Year
515 S President St	763.96								Y	10-Year
503 S President St	764.62	DEP6	758.08	758.62	759.41	759.99	760.51	761.61	N	--
529 S President St	762.69								N	--
517 S President St	763.73								N	--
521 S President St	766.50								N	--
507 Kipling Ct	761.29								Y	500-Year
511 Kipling Ct	759.71								Y	50-Year
519 Kipling Ct	758.46								Y	10-Year
523 Kipling Ct	758.66								Y	25-Year
529 Kipling Ct	758.06								Y	5-Year
1103 Evergreen St	757.97								Y	5-Year
506 Kipling Ct	761.49								Y	500-Year
510 Kipling Ct	759.76								Y	50-Year
514 Kipling Ct	758.17								Y	10-Year
518 Kipling Ct	757.95								Y	5-Year
522 Kipling Ct	757.50								Y	5-Year
528 Kipling Ct	756.78								Y	5-Year
1015 Evergreen St	756.65								Y	5-Year
1006 Evergreen St	762.30								N	--
1010 Evergreen St	761.02								Y	500-Year
1014 Evergreen St	764.64								N	--
1018 Evergreen St	760.75								Y	500-Year
1102 Evergreen St	761.02								Y	500-Year
1106 Evergreen St	761.81								N	--
1110 Evergreen St	761.46								Y	500-Year
1114 Evergreen St	761.30								Y	500-Year
1118 Evergreen St	761.78								N	--
606 Williston St	761.56								Y	500-Year

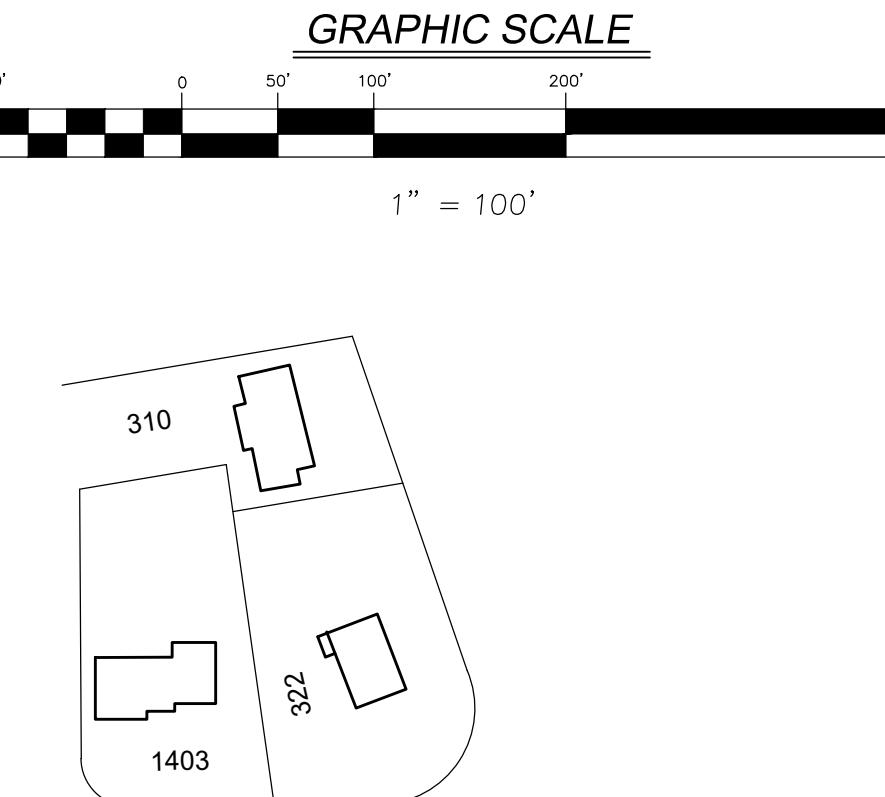


## Extrapolation Graph for 500-year Frequency - Bulletin 71 NE IL Sectional Depths

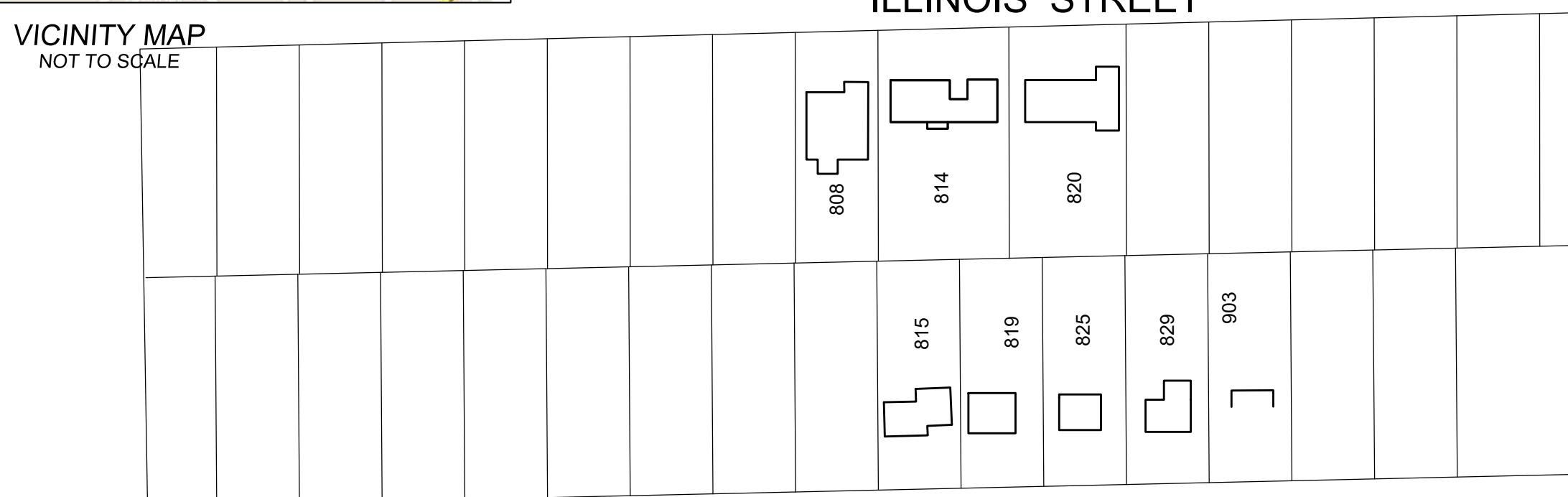




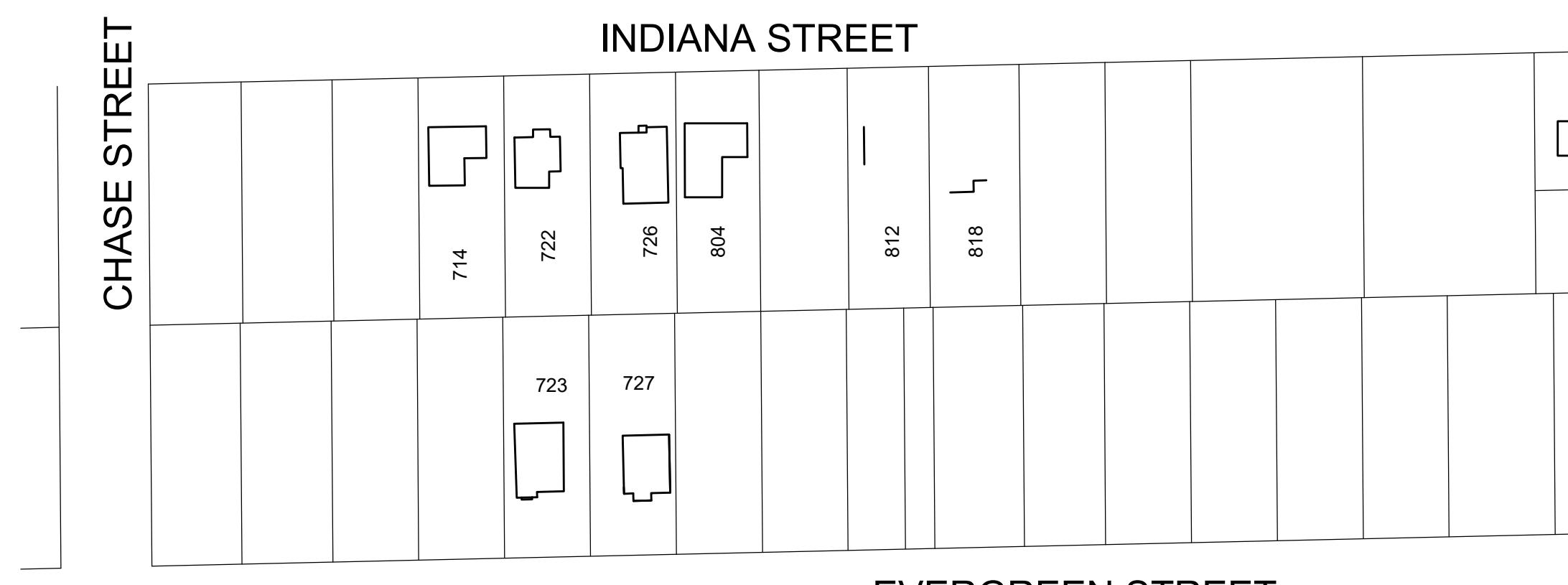
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OF  
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY**



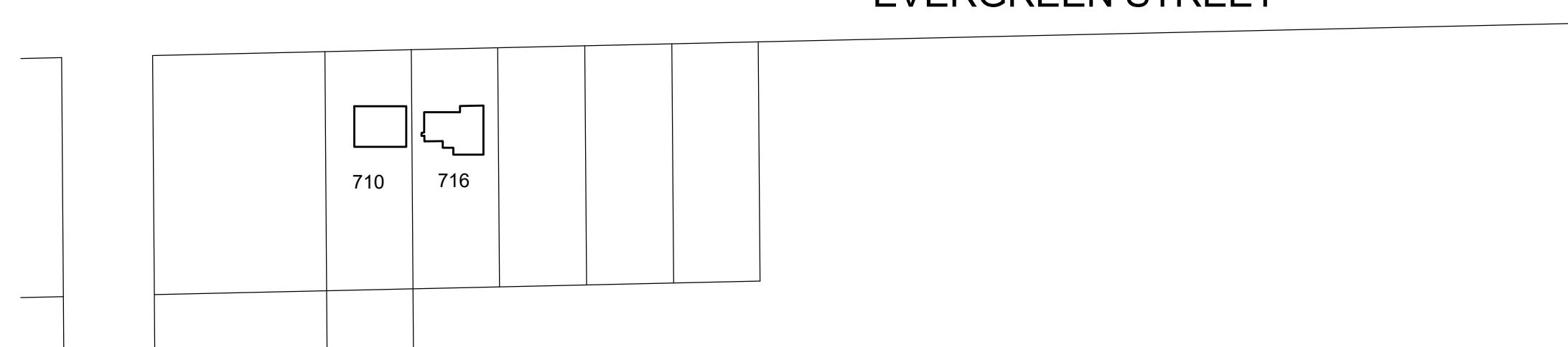
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NOT TO SCALE



ILLINOIS STREET

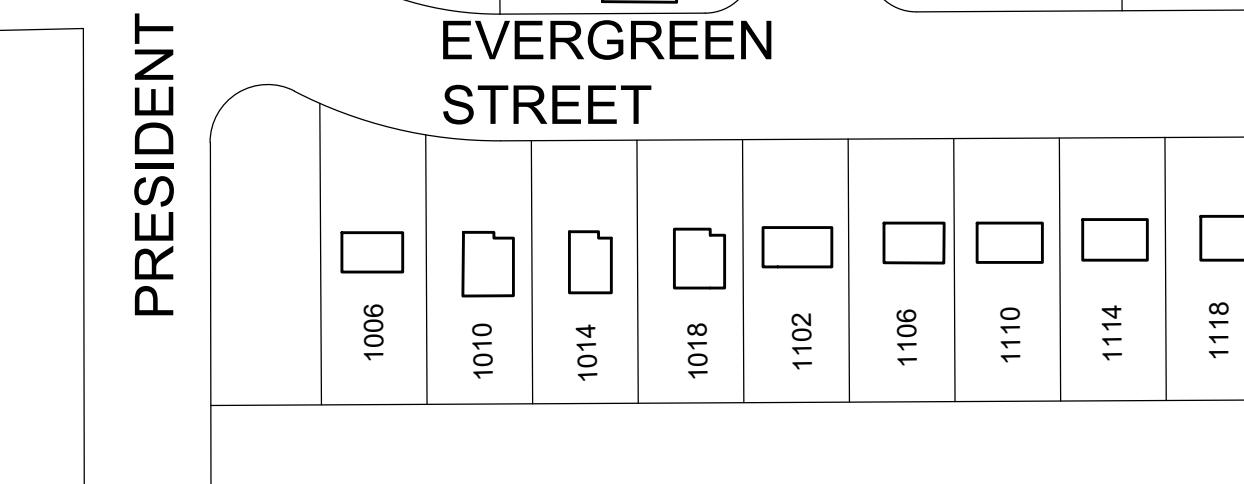


INDIANA STREET



EVERGREEN STREET

PRESIDENT STREET



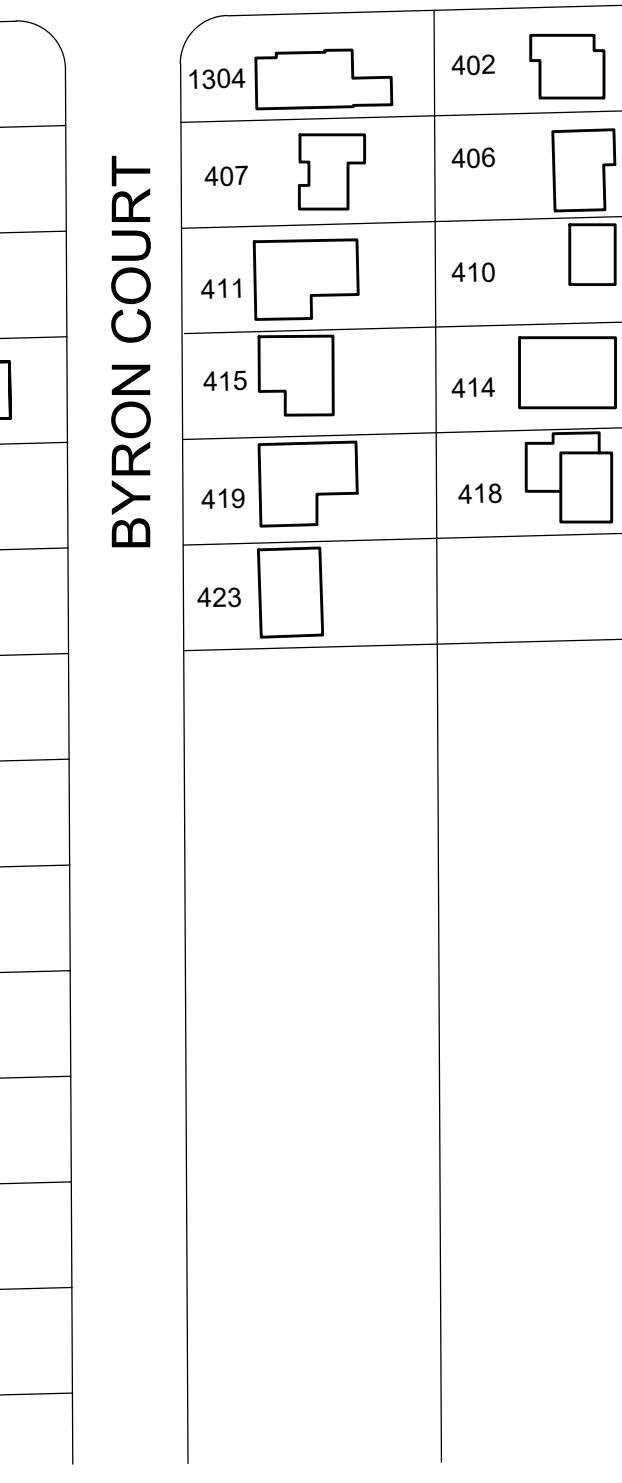
EVERGREEN  
STREET



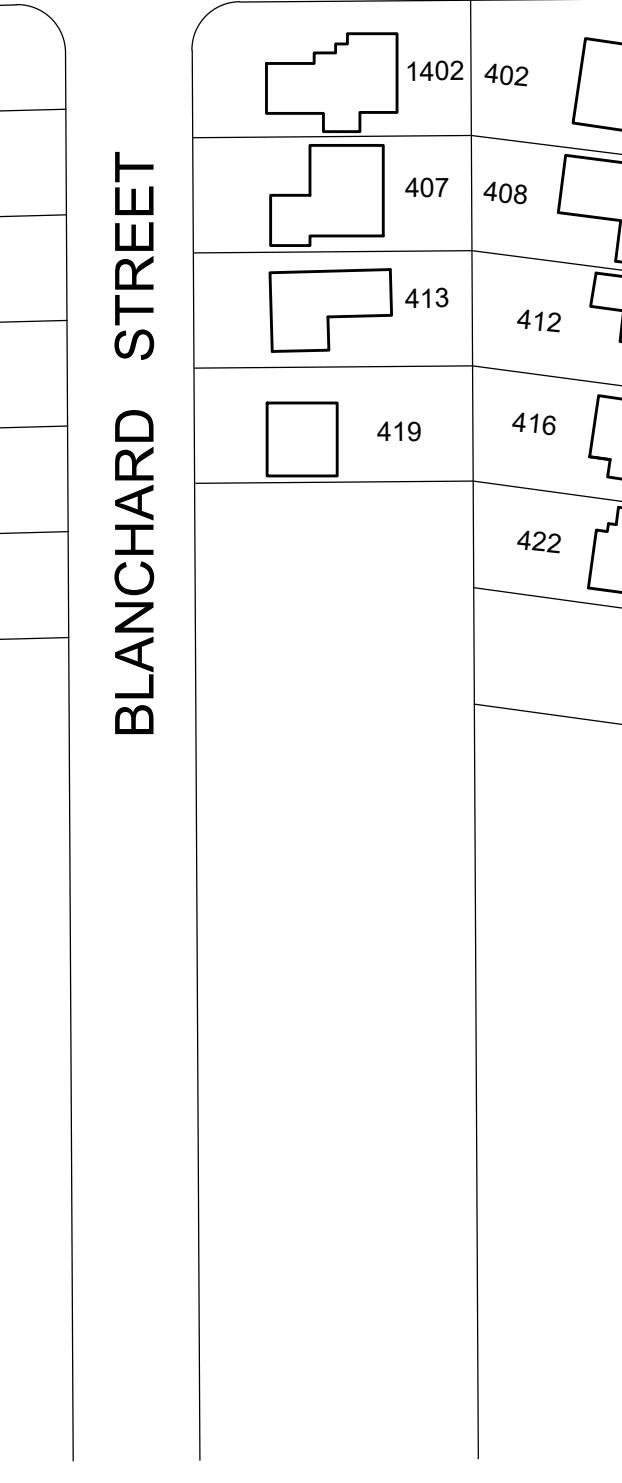
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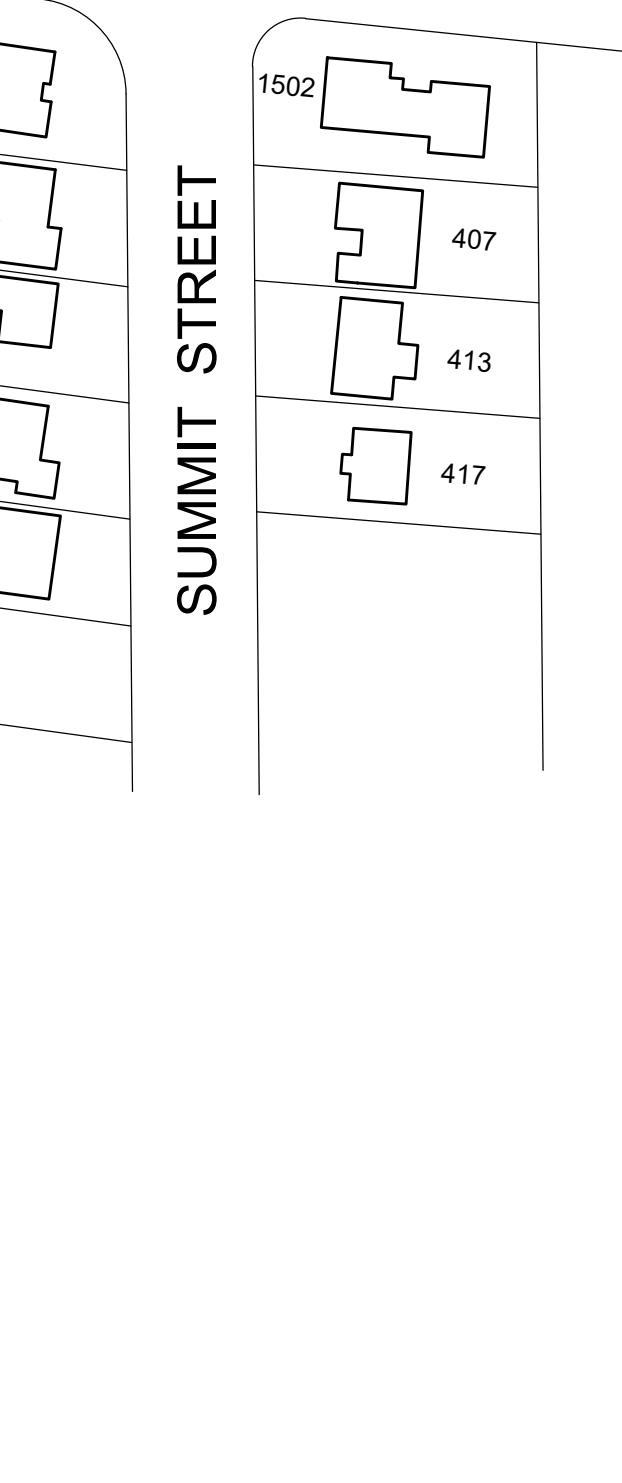
WILLISTON STREET



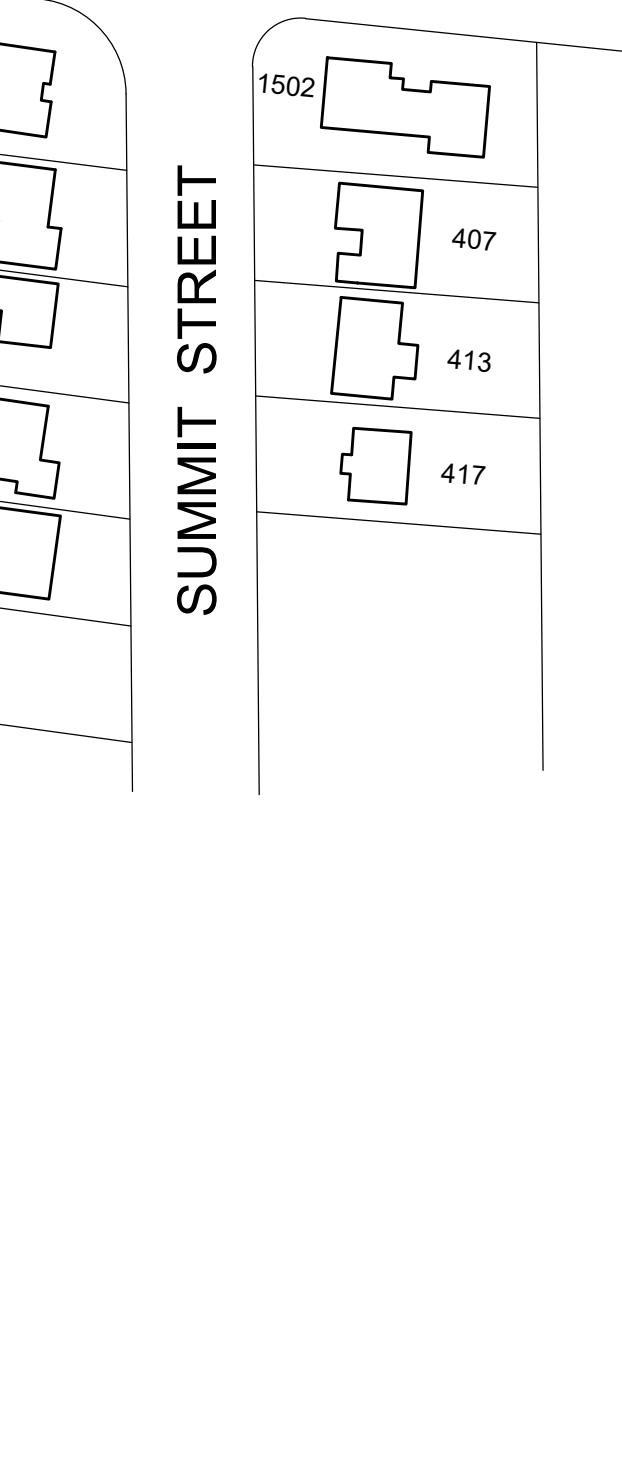
BYRON COURT



BLANCHARD STREET



ILLINOIS STREET



SUMMIT STREET

GENERAL NOTES

1. COMPARE ALL POINTS IN FIELD PRIOR TO ANY CONSTRUCTION AND REPORT ANY DISCREPANCIES TO SURVEYOR AT ONCE.
2. FOR BUILDING RESTRICTIONS AS ESTABLISHED BY LOCAL ORDINANCES NOT SHOWN HEREON, CONSULT YOUR LOCAL MUNICIPAL AUTHORITIES.
3. DO NOT SCALE DIMENSIONS FROM THIS MAP.
4. CALL J.U.L.I.E. AT 1-800-892-0123 FOR FIELD LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO ANY DIGGING OR CONSTRUCTION.
5. UTILITIES AND IMPROVEMENTS SHOWN HEREON BASED ON VISIBLE FIELD VERIFIED STRUCTURES.
6. BOUNDARY INFORMATION SHOWN HEREON, IF ANY EXISTS, IS FOR GRAPHICAL DEPICTION ONLY. NO MONUMENTATION FIELD LOCATED. USE AT OWN RISK.
7. THE OWNER SHOULD COMPARE THE DESCRIPTION ON THIS MAP, IF ANY EXISTS, WITH HIS, OR HER DEED ABSTRACT, OR TITLE POLICY AND NOTIFY SURVEYOR OF ANY DIFFERENCES.
8. THIS EXHIBIT DOES NOT CONSTITUTE A PLAT OF SURVEY.
9. ROW AND LOT LINES ARE APPROXIMATE PER DUPAGE COUNTY TAX MAP. POSSIBILITY EXISTS THAT ROADWAYS MAY NOT HAVE BEEN BUILT IN CENTER OF R.O.W.
10. THIS TOPOGRAPHIC EXHIBIT IS PREPARED FOR A DRAINAGE STUDY AND DOES NOT SHOW ALL DETAILS OF IMPROVEMENTS.

BENCHMARKS

**SOURCE**  
M121002 (A.K.A. NGS DK3172): BRONZE DISC ON LIGHT POLE BASE AT THE EAST SIDE OF BLANCHARD STREET, 46.20 FEET SOUTHWEST OF THE SOUTHWEST CORNER OF 2-STORY BRICK AND FRAME BUILDING, SOUTH OF LEYTONSTONE DRIVE AND 55.23 FEET NORTHWEST OF A CROSS NOTCH ON THE NORTHWEST CORNER OF THE PARKING LOT EAST OF BLANCHARD ROAD.  
ELEVATION = 755.19 PUBLISHED AND HELD (NAVD 88)

M121001 (A.K.A. NGS DK3171): BRONZE DISK MONUMENT ON CONCRETE BASE OF LIGHT POLE AT THE WEST SIDE OF PRESIDENT ST. 85.18 FEET NORTHEAST OF THE SOUTHEAST CORNER OF 1-STORY BUILDING #804 AND 58.84 FEET SOUTHEAST OF THE NORTHEAST CORNER OF 1-STORY BUILDING #724.  
ELEVATION = 761.61 PUBLISHED, 761.65 MEASURED (NAVD 88)

**SITE**  
BM 101: SET CUT CROSS AT NORTHEAST CORNER OF EVERGREEN AND CHASE STREET, NORTH OF EAST-WEST SIDEWALK AT SOUTHWEST CORNER OF RESIDENCE #825 CHASE STREET.  
ELEVATION=772.92

**BM #118:**  
SET NAIL IN BITUMINOUS PAVEMENT, CENTERLINE OF ILLINOIS AND IN LINE WITH THE NORTH SIDE OF BYRON COURT APPROXIMATE 22 FEET NORTH OF A FYRE HYDRANT AT SOUTHEAST CORNER OF BYRON AND ILLINOIS AND 18 FEET NORTH OF A POWER POLE AND 20 FEET SOUTH OF AN INLET ON THE NORTH SIDE OF ILLINOIS.  
ELEVATION=764.84

(ADD 0.23' FOR NGVD 29 DATUM)

LEGEND

- EXISTING RIGHT-OF-WAY LINE
- EXISTING LOT LINE
- BUILDING LINE
- EXISTING SPOT ELEVATION

782.62



Engineers  
Scientists  
Surveyors

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630.724.0384 fax  
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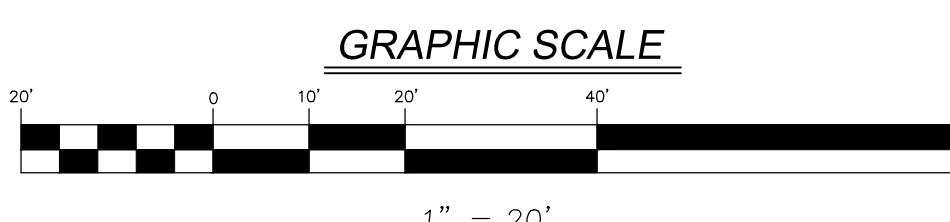
PREPARED FOR:  
City of Wheaton  
303 West Wesley Street  
Wheaton, Illinois, 60187  
630-260-2000

REVISIONS		
NO.	DATE	DESCRIPTION

TOPOGRAPHIC EXHIBIT		
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY, AREA 12		
DRAFTING COMPLETED:	07-24-18	DRAWN BY: SPK PROJECT MANAGER: GVB
FIELD WORK COMPLETED:	07-19-18	CHECKED BY: GVB SCALE: 1" = N/A

Project No:	12045.01
Group No:	VP03.1
SHEET NO.	1 of 9

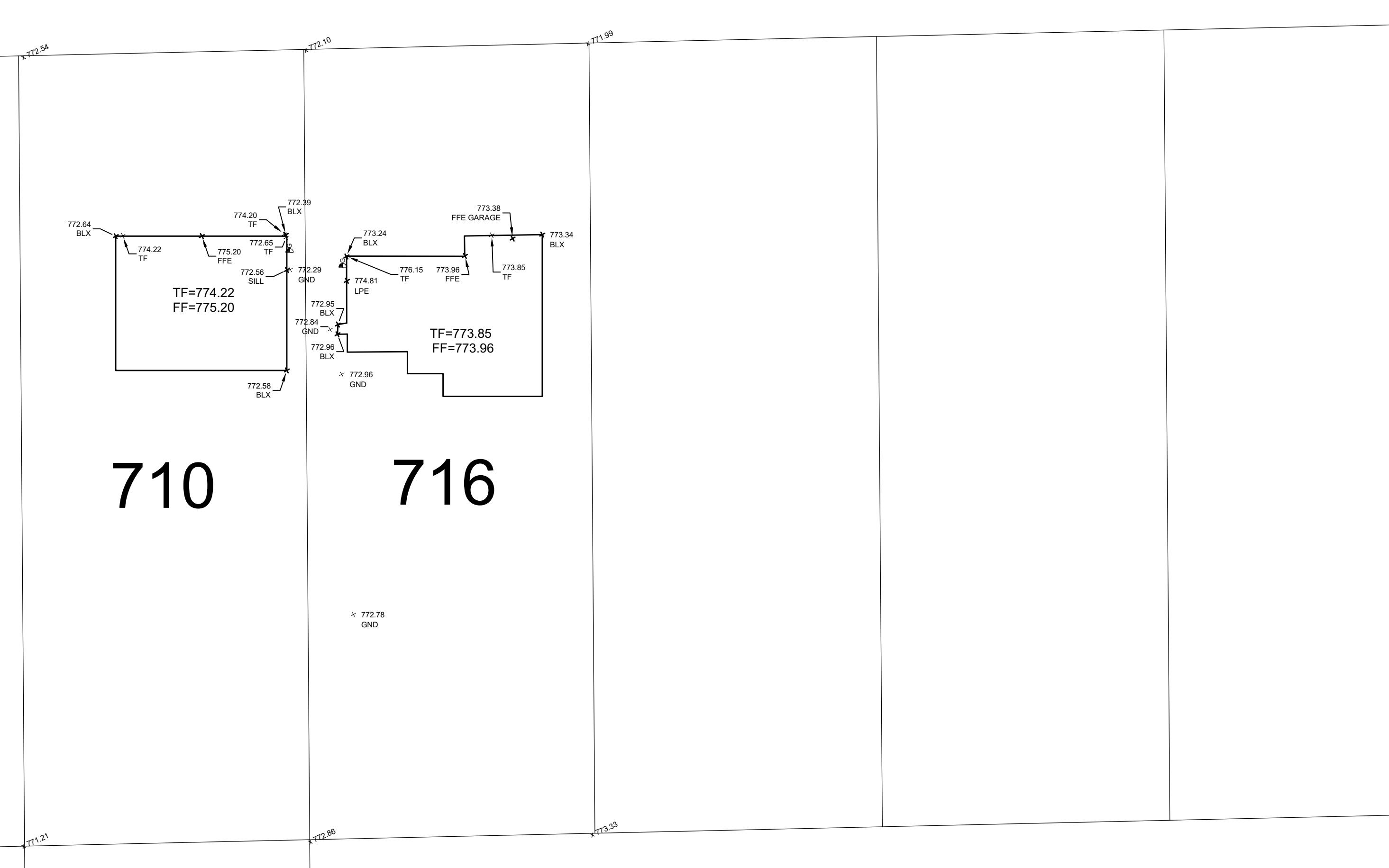
TOPOGRAPHIC EXHIBIT  
OF  
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY



INDIANA STREET



EVERGREEN STREET



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630-260-2000

NO.	DATE	REVISIONS DESCRIPTION

TOPOGRAPHIC EXHIBIT

WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY

Project No: 12045.01

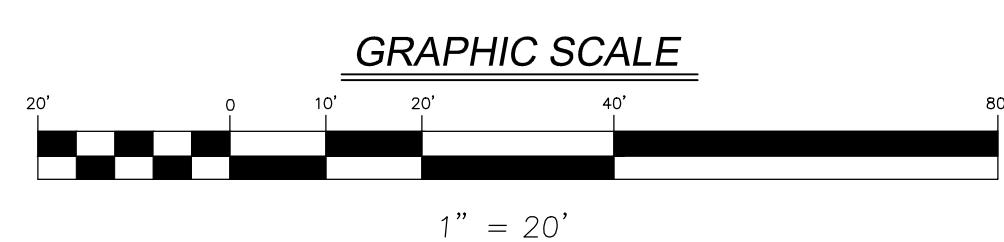
Group No: VP03.1

DRAFTING COMPLETED: 07-24-18 DRAWN BY: SPK PROJECT MANAGER: GVB

FIELD WORK COMPLETED: 07-19-18 CHECKED BY: GVB SCALE: 1" = 20'

2 of 9

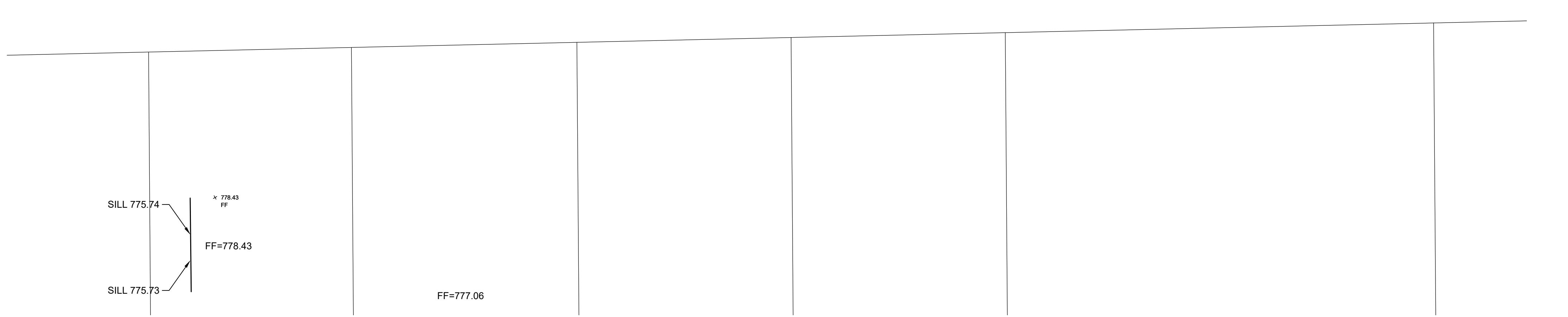
TOPOGRAPHIC EXHIBIT  
OF  
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY



ILLINOIS STREET



INDIANA STREET



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			DESCRIPTION	

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Project No: 12045.01

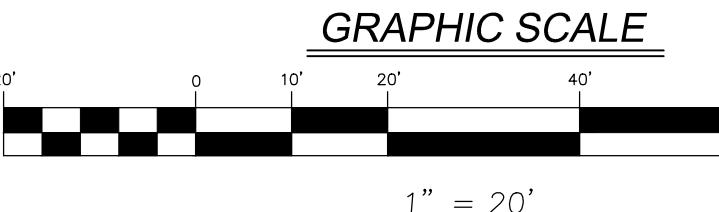
Group No: VP03.1

SHEET NO.

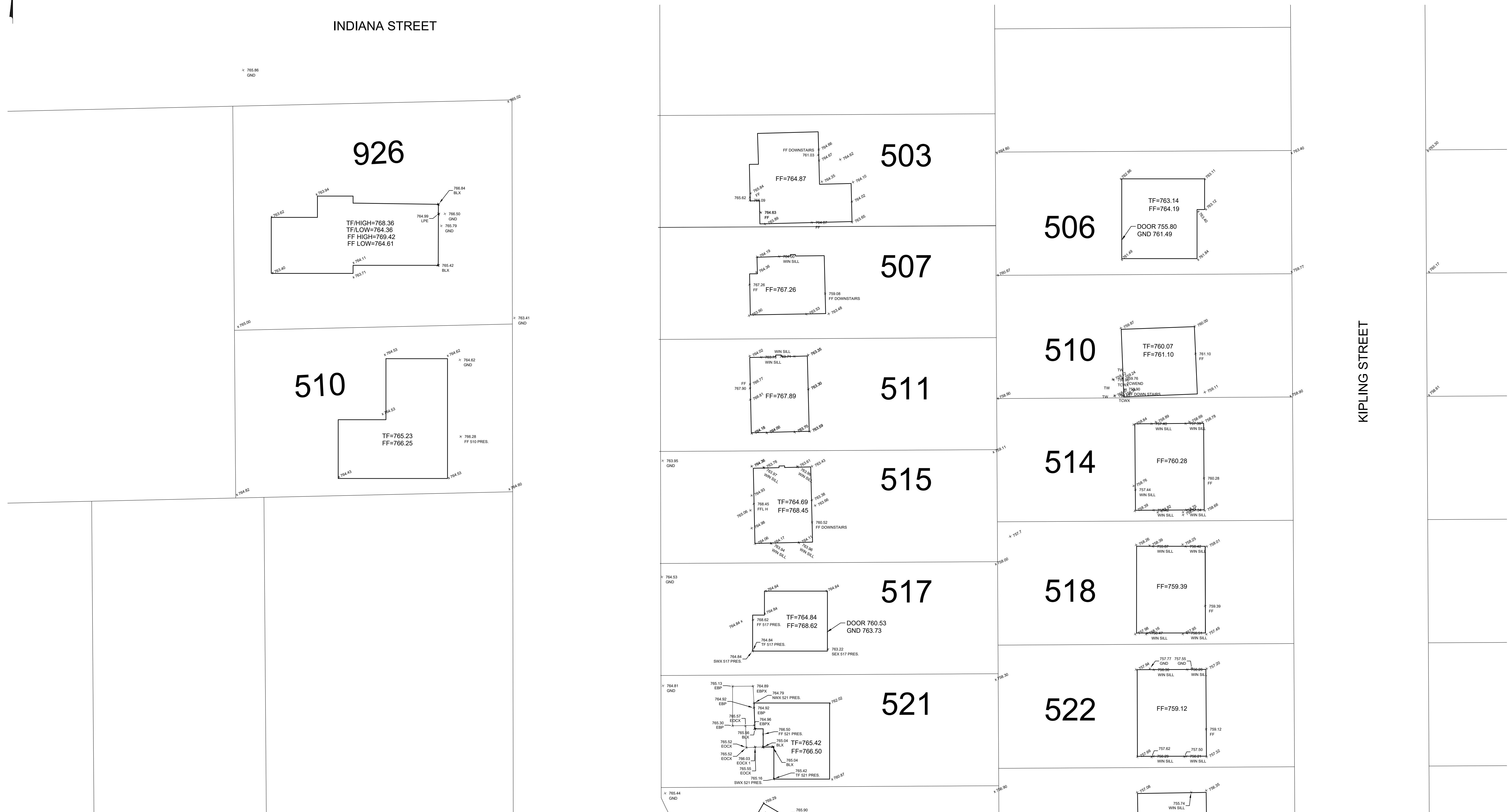
3 of 9

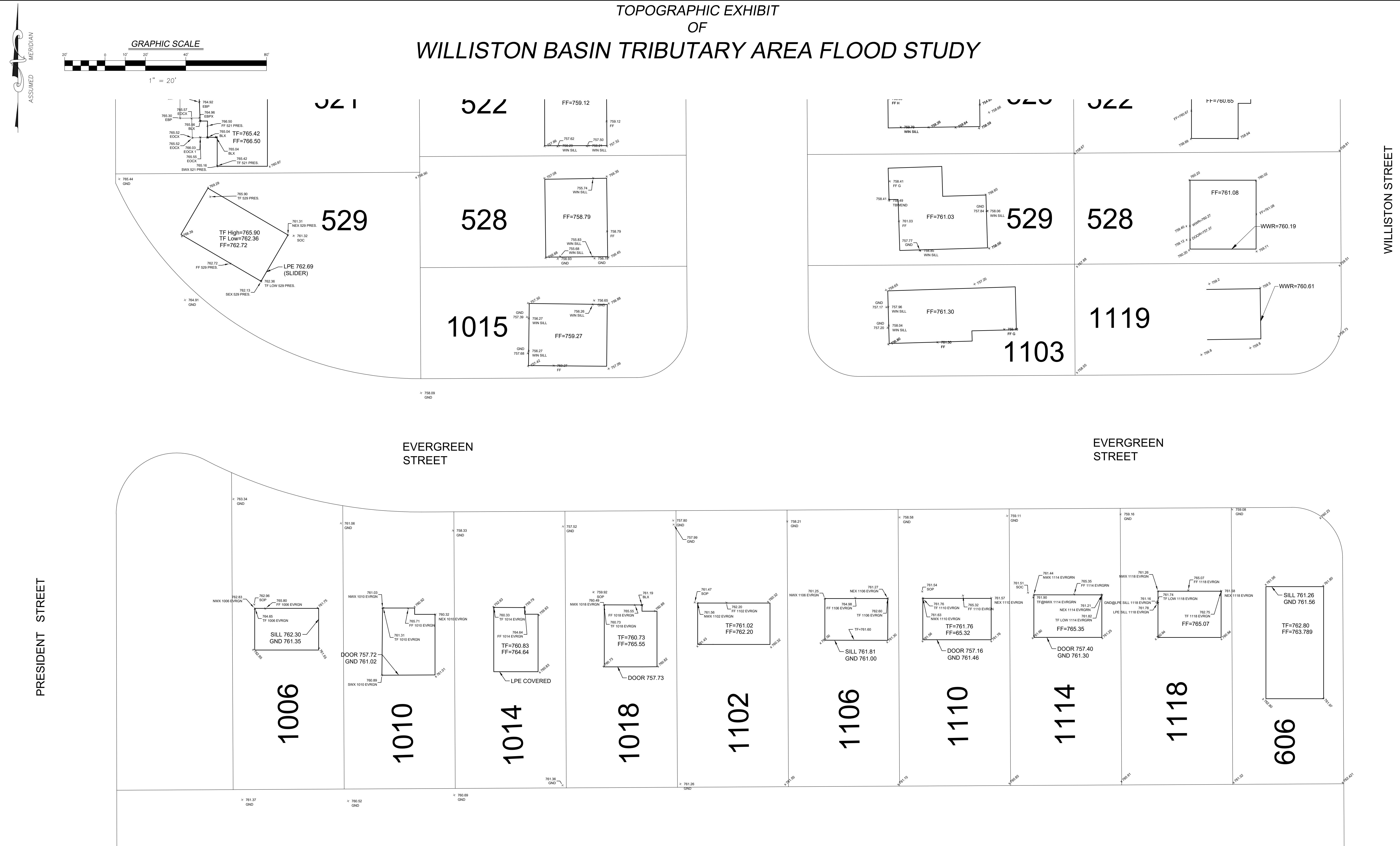


*TOPOGRAPHIC EXHIBIT  
OF  
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY*



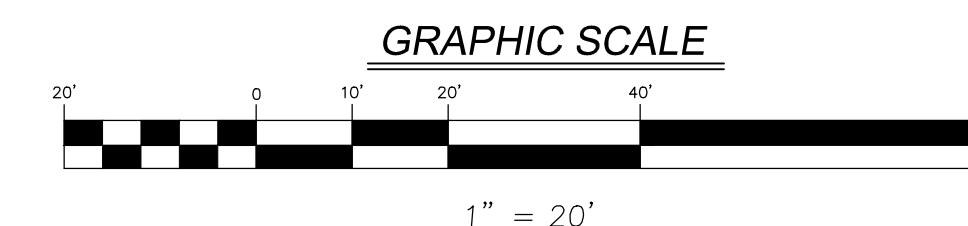
## INDIANA STREET





*TOPOGRAPHIC EXHIBIT  
OF  
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY*

# ILLINOIS STREET



A vertical line with a wavy line running parallel to it, and the text "ASSUMED MERIDIAN" written vertically along the right side.

# BLANCHARD STREET

## WILLISTON STREET

# V3

Engineers  
Scientists  
Surveyors

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## TOPOGRAPHIC EXHIBIT

# STON BASIN TRIBUTARY AREA FLOOD STUDY

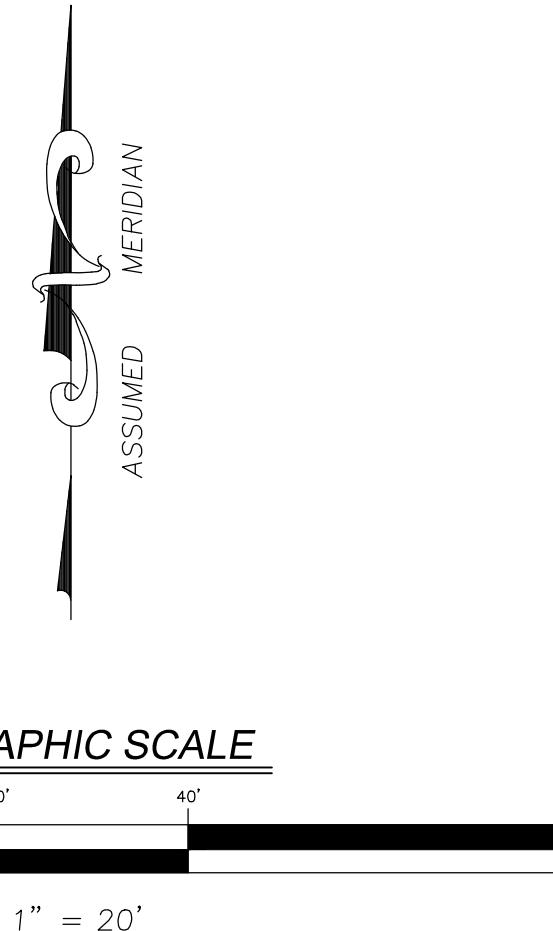
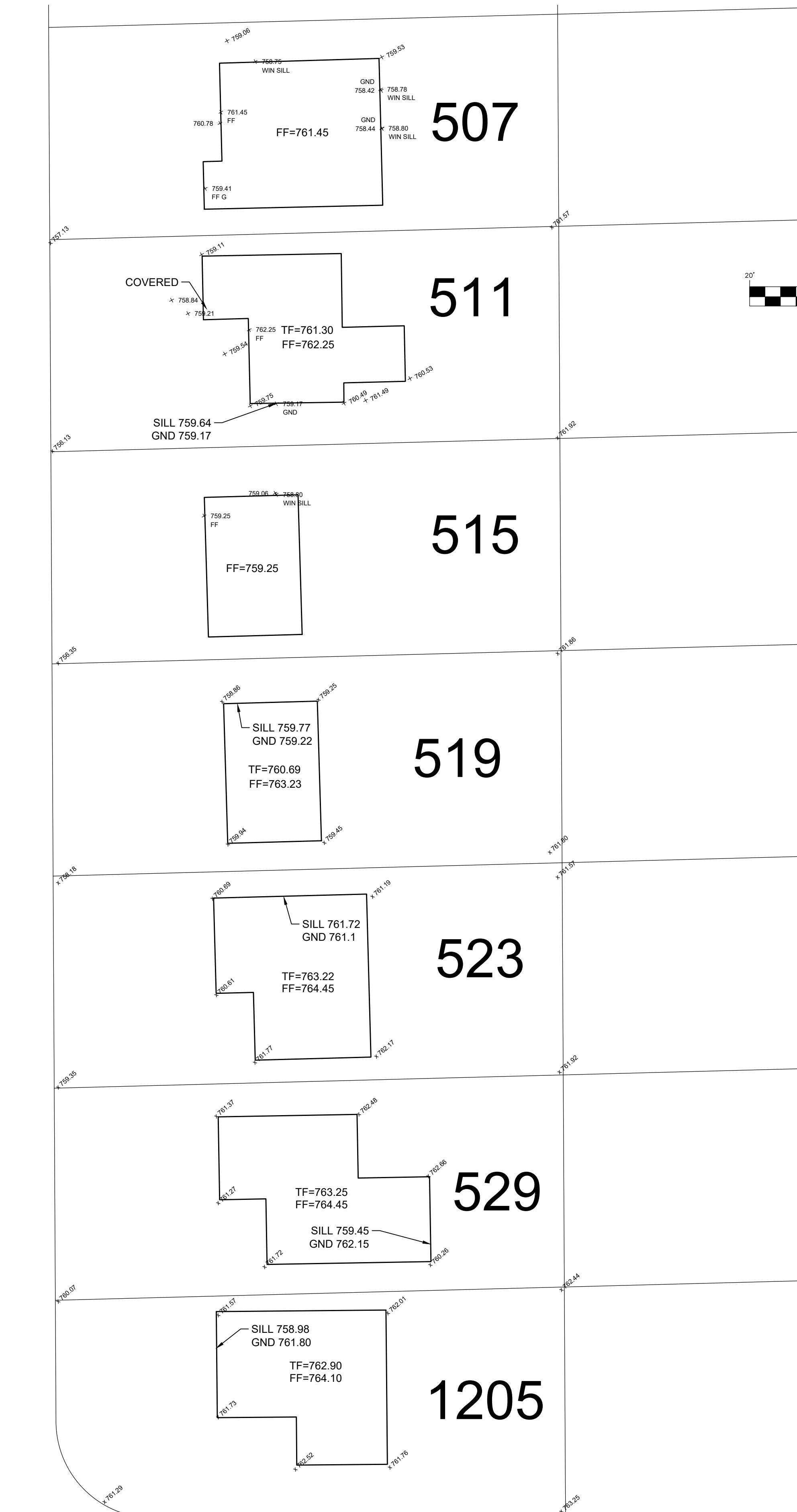
07-24-18 DRAWN BY: SPK PROJECT MANAGER: GV

Project No: 12045.01  
Group No: VP03.1

**SHEET NO.**  
**6      of      9**

6 of 9

*TOPOGRAPHIC EXHIBIT  
OF  
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY*



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Wheaton, Illinois, 60187  
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# TOPOGRAPHIC EXHIBIT

## WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY

DRAFTING COMPLETED:	07-24-18	DRAWN BY:	SPK	PROJECT MANAGER:	GVB
FIELD WORK COMPLETED:	07-19-18	CHECKED BY:	GBV	SCALE:	1" = 20'

Project No: 12045.01

Group No: VP03.1

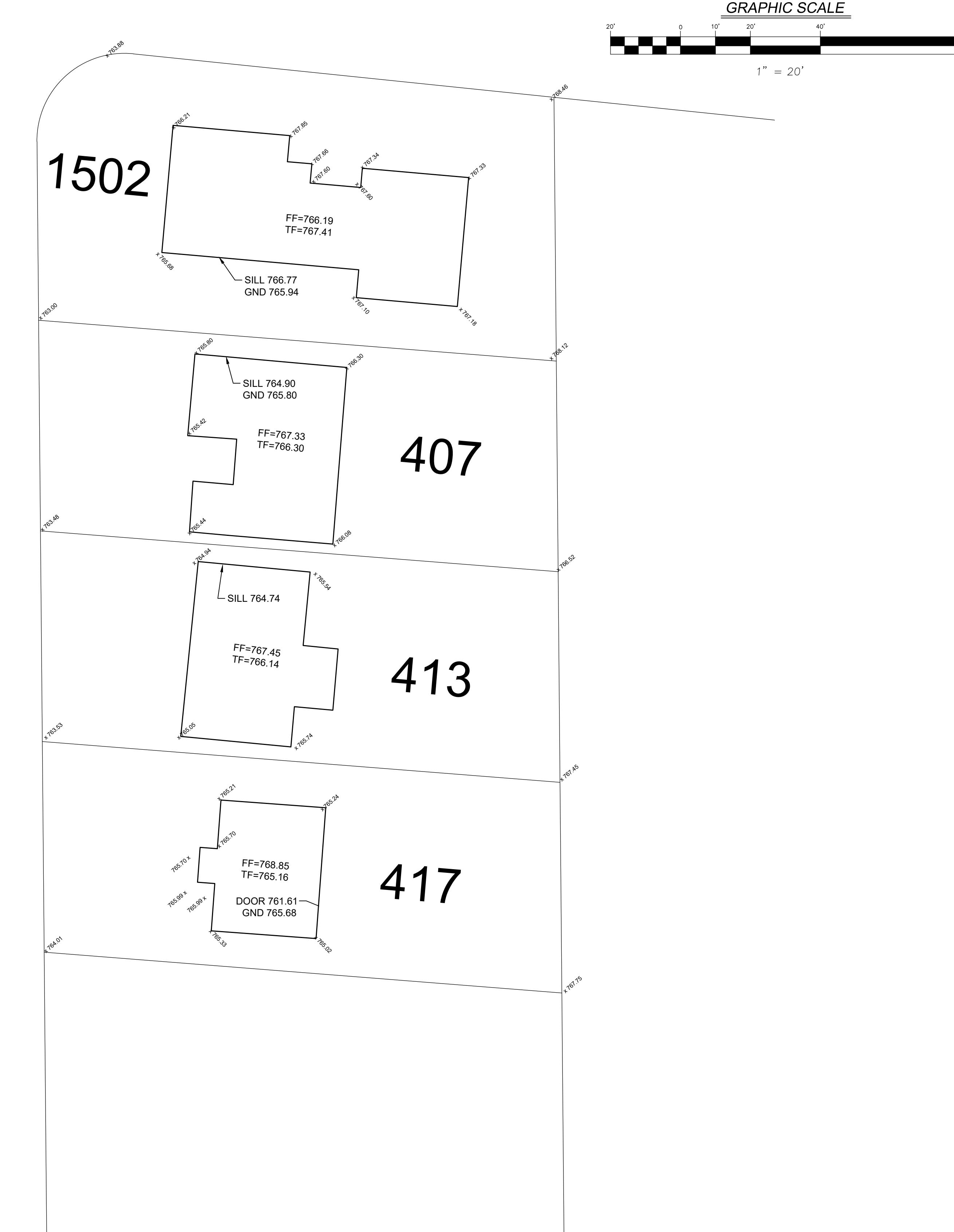
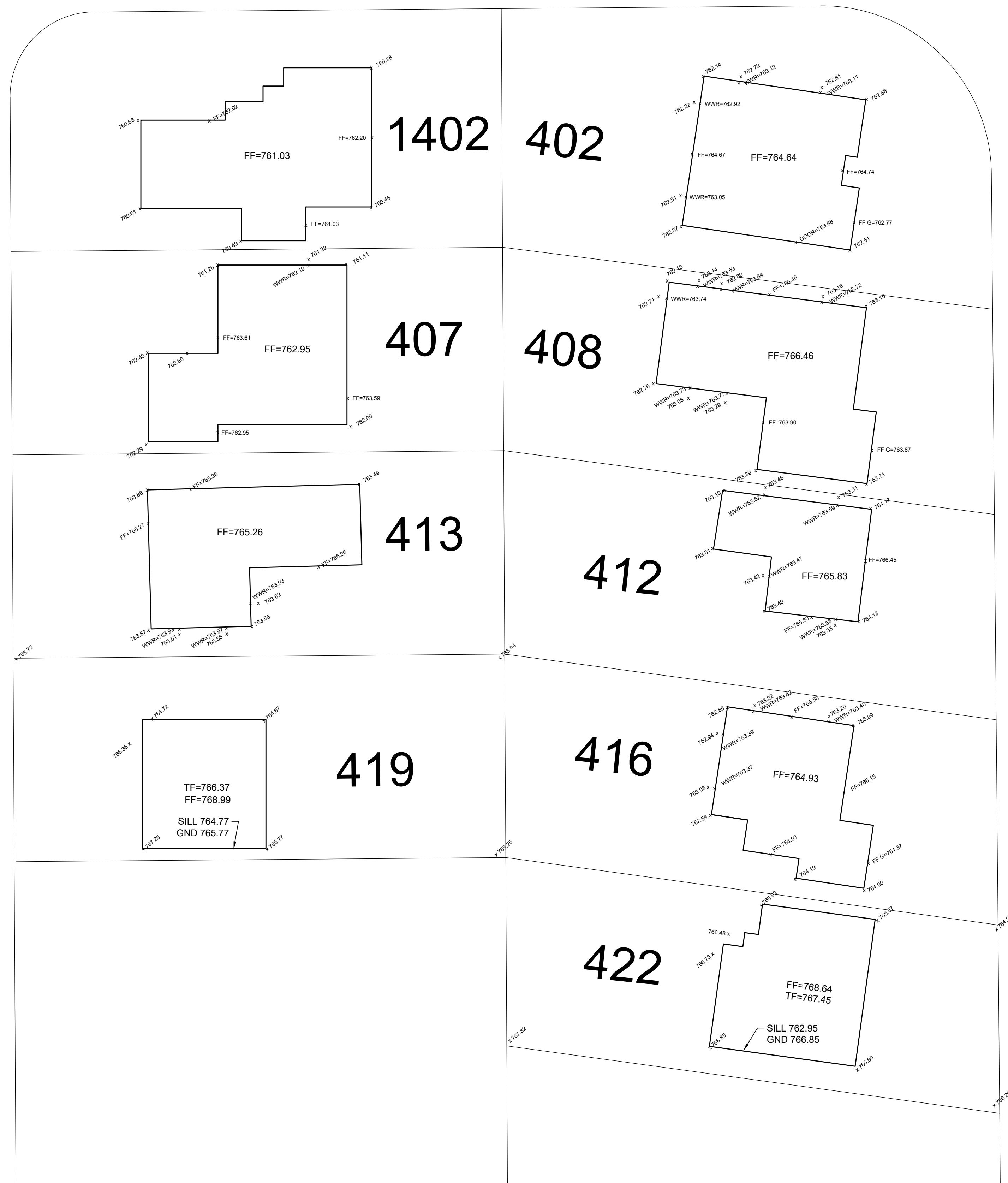
SHEET NO.  
7 of 9

*TOPOGRAPHIC EXHIBIT  
OF  
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY*

A vertical decorative line with a black and white striped pattern, ending in a flourish, with the text "ASSUMED MERIDIAN" written vertically next to it.

## ILLINOIS STREET

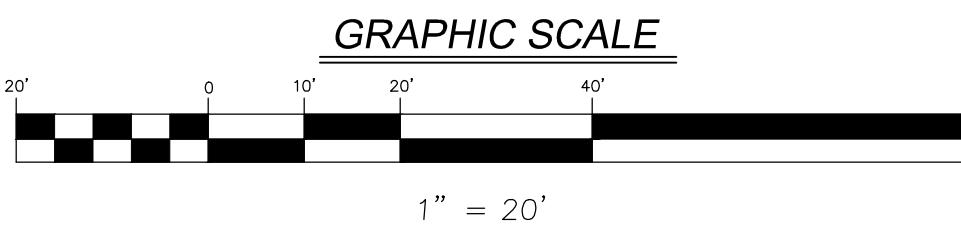
BLANCHARD STREET



TOPOGRAPHIC EXHIBIT  
OF

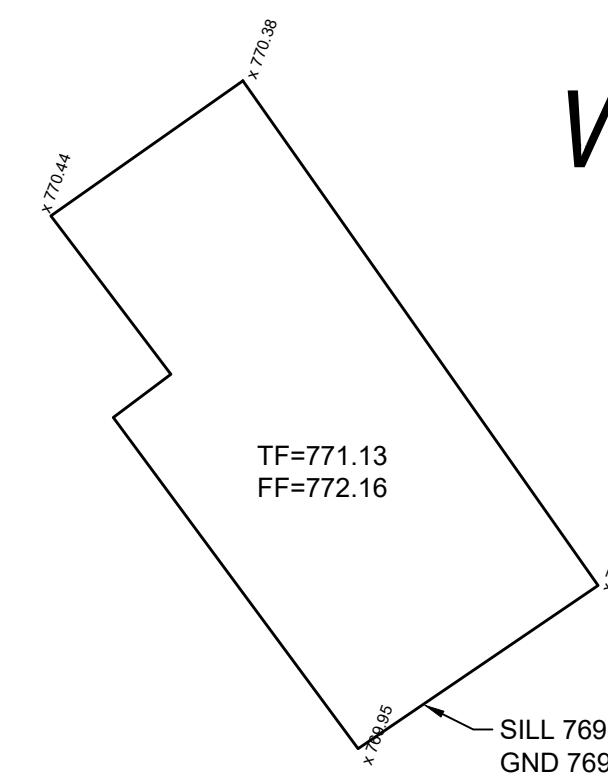
WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY

ASSUMED MERIDIAN

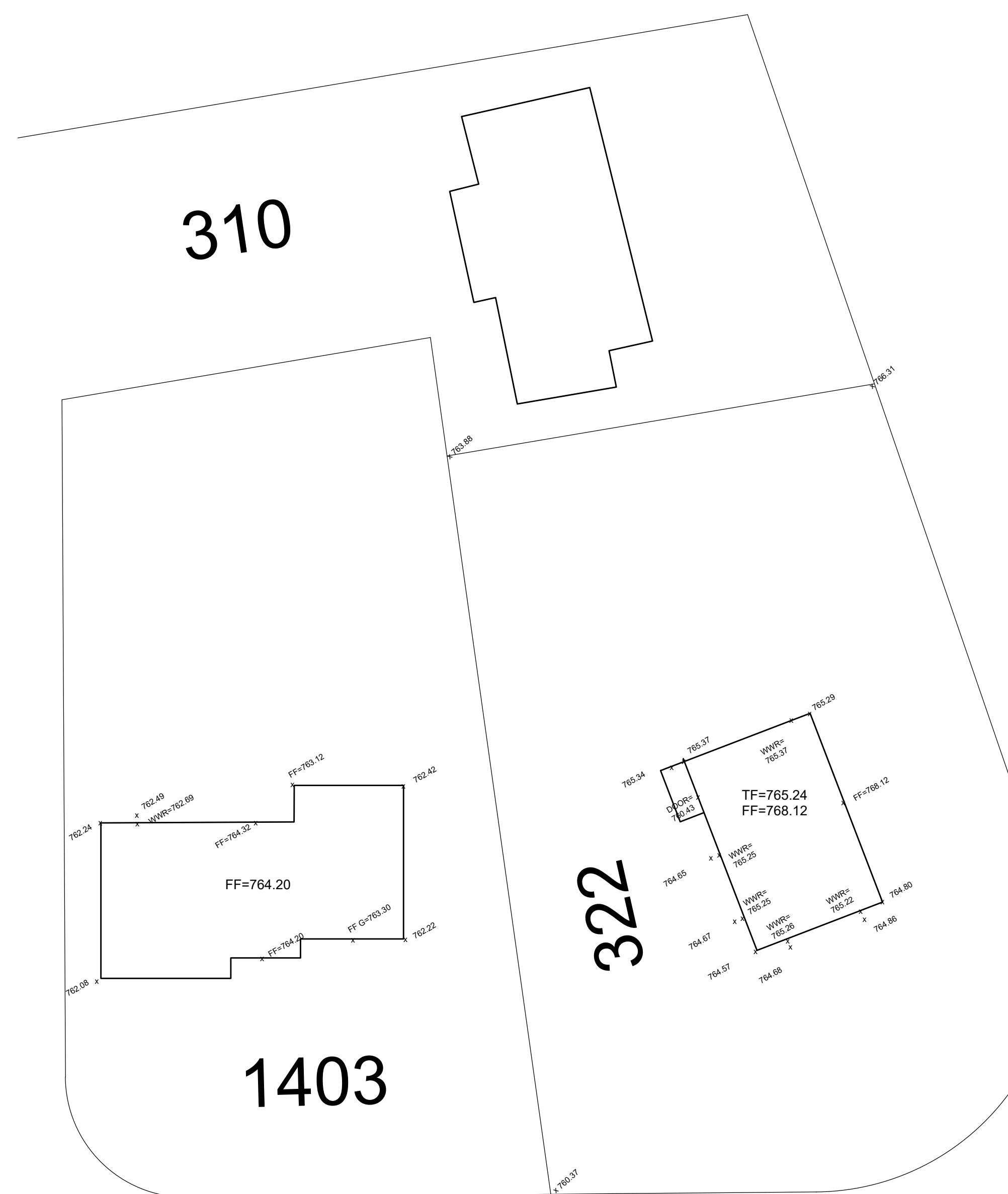


BLANCHARD STREET

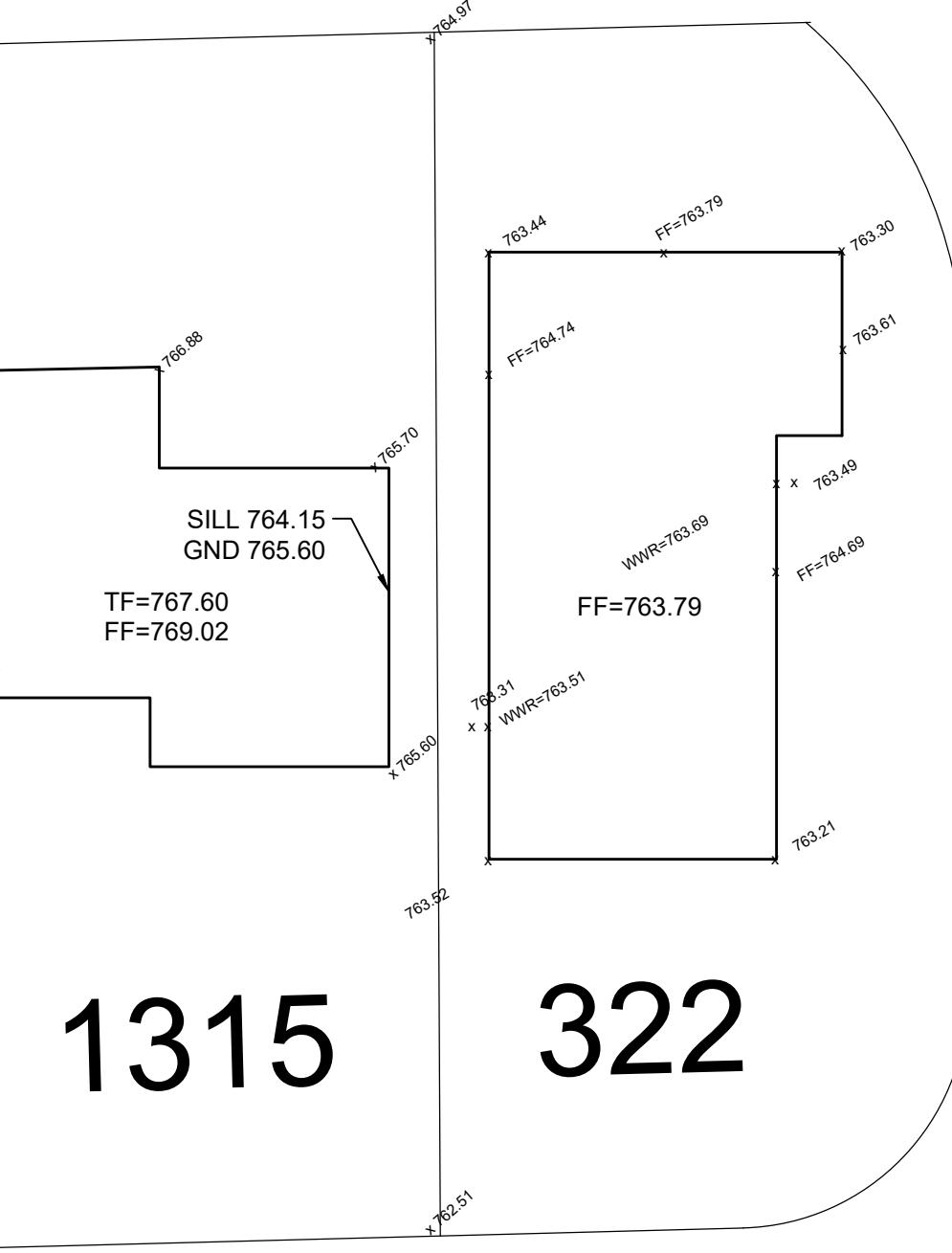
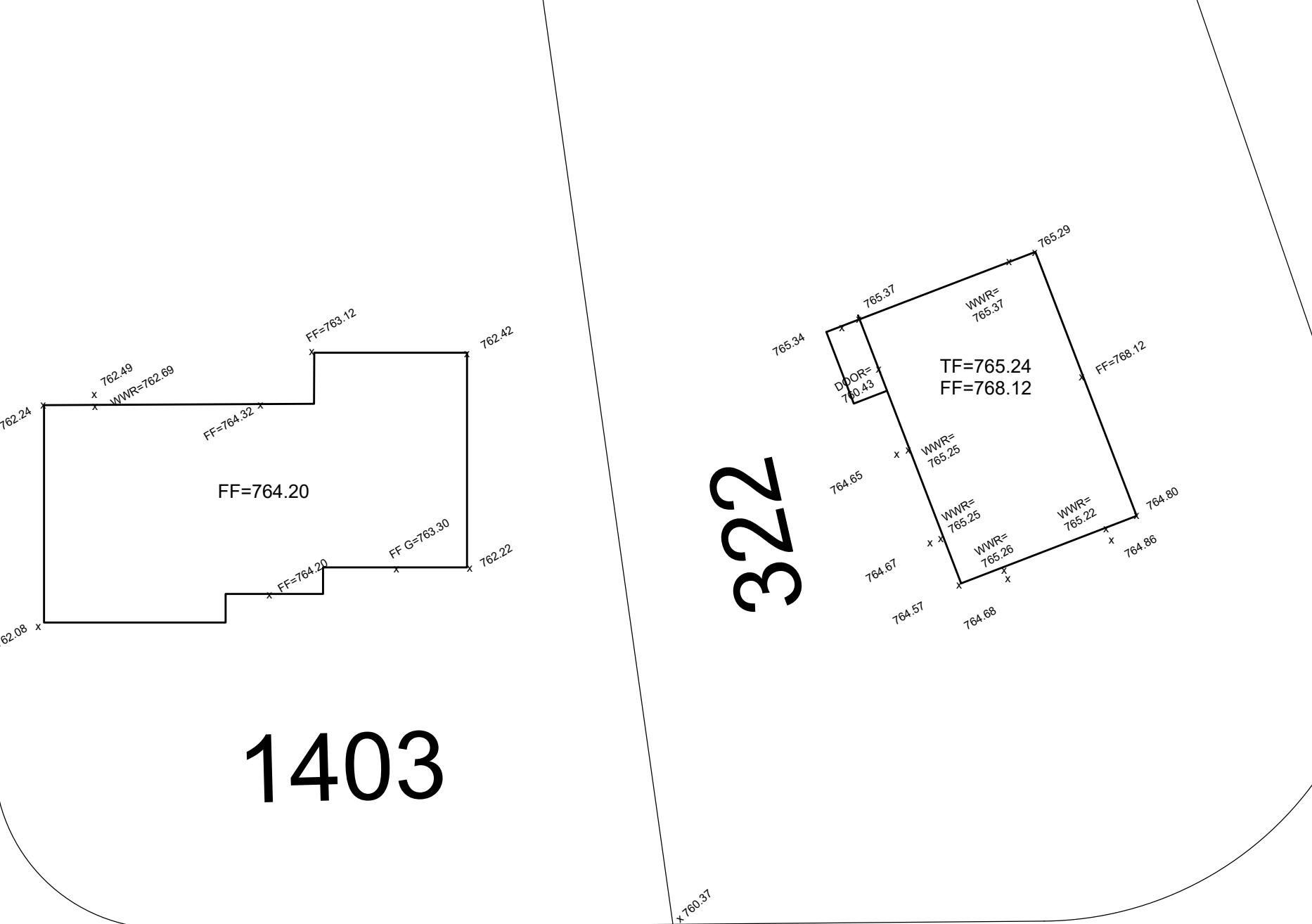
305



310

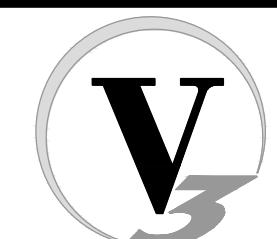


322



1315

322



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630-260-2000

REVISIONS		
NO.	DATE	DESCRIPTION

TOPOGRAPHIC EXHIBIT

WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY

DRAFTING COMPLETED: 07-24-18 DRAWN BY: SPK PROJECT MANAGER: GVB  
FIELD WORK COMPLETED: 07-19-18 CHECKED BY: GVB SCALE: 1" = 20'

Project No: 12045.01

Group No: VP03.1

SHEET NO. 9 of 9

APPENDIX 2  
PROPOSED CONDITIONS SUPPORTING DATA



**WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY**  
**ALTERNATIVE 1-PROPOSED CONDITIONS AT-RISK STRUCTURE TABLE**





**WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY**  
**ALTERNATIVE 2-PROPOSED CONDITIONS AT-RISK STRUCTURE TABLE**





**WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY**  
**ALTERNATIVE 3-PROPOSED CONDITIONS AT-RISK STRUCTURE TABLE**

415 Williston St	765.00	DEP7	757.72	757.83	758.13	759.10	759.94	760.80	N	--
419 Williston St	760.56								Y	500-Year
423 Williston St	760.25								Y	500-Year
502 Williston St	761.37								N	--
506 Williston St	758.22								Y	50-Year
518 Williston St	759.39								Y	100-Year
522 Williston St	759.63								Y	100-Year
528 Williston St	759.12								Y	100-Year
1119 Evergreen St	760.61								Y	500-Year
503 Williston St	759.46								Y	100-Year
507 Williston St	759.06								Y	50-Year
511 Williston St	759.64								Y	100-Year
515 Williston St	759.06								Y	50-Year
519 Williston St	759.77								Y	100-Year
523 Williston St	761.72								N	--
529 Williston St	762.15								N	--
1205 Evergreen St	761.80								N	--
410 Byron Ct	763.78								N	--
414 Byron Ct	761.40	DEP8	759.00	759.58	759.91	759.94	759.97	760.80	N	--
422 Byron Ct	762.23								N	--
418 Byron Ct	762.18								Y	500-Year
407 Byron Ct	765.24	DEP9	758.75	759.62	760.51	761.29	761.97	763.40	N	--
411 Byron Ct	765.19								N	--
415 Byron Ct	765.80								N	--
419 Byron Ct	767.37								N	--
423 Byron Ct	765.04								N	--
410 Blanchard St	764.40								Y	500-Year
414 Blanchard St	765.12								N	--
418 Blanchard St	765.00								N	--
413 Blanchard St	763.93								Y	500-Year
419 Blanchard St	765.77								N	--
402 Summit St	762.92								Y	100-Year
408 Summit St	763.59								Y	500-Year
412 Summit St	763.31								Y	500-Year
416 Summit St	763.37								Y	500-Year
422 Summit St	766.85								N	--
1502 Illinois St	766.19								N	--
407 Summit St	765.80								N	--
413 Summit St	764.94								N	--
417 Summit St	765.68								N	--
322 Blanchard St	763.31								Y	500-Year
305 Blanchard St	769.77								N	--
1315 Illinois St	765.60								N	--
1403 Illinois St	762.49								Y	100-Year
1304 Illinois St	764.80								N	--
322 Summit St	765.22								N	--
		DEP10	759.42	760.51	761.55	762.29	762.98	764.50		

914 S President St	758.57	D	758.90	759.15	759.40	759.62	759.81	760.20	Y	5-Year
920 S President St	758.70								Y	5-Year
926 S President St	759.35								Y	25-Year
1006 Wilson Ave	758.02	E	756.56	757.25	757.93	758.58	759.34	760.20	Y	50-Year
1006 Pershing Ave	758.84								Y	100-Year
1010 Pershing Ave	758.80								Y	100-Year
921 S President St	759.00								Y	100-Year
1007 Wilson Ave	758.72								Y	100-Year
815 S President St	759.32								Y	100-Year
1011 Pershing Ave	758.92								Y	100-Year
903 S President St	759.67								Y	500-Year
1014 Pershing Ave	759.73								Y	500-Year
1018 Wilson Ave	759.47								Y	500-Year
1019 Pershing Ave	759.51								Y	500-Year
1119 Pershing Ave	757.56	F	758.28	758.60	758.89	759.08	759.26	759.90	Y	5-Year
1111 Pershing Ave	758.52								Y	10-Year
1115 Pershing Ave	758.26								Y	5-Year
1218 Pershing Ave	758.27								Y	5-Year
824 S Williston St	758.24								Y	5-Year
1215 Pershing Ave	758.74								Y	25-Year
1302 Pershing Ave	759.01								Y	50-Year
1304 Pershing Ave	758.96								Y	50-Year
1222 Pershing Ave	759.09								Y	100-Year
904 Blanchard St	759.13								Y	100-Year
1106 Taft Ave	759.13								Y	100-Year
1308 Pershing Ave	759.24								Y	100-Year
1407 Wilson Ave	757.41	G	757.54	757.60	757.69	757.78	757.90	758.40	Y	5-Year
1512 Wilson Ave	757.74								Y	50-Year
1410 Wilson Ave	757.77								Y	50-Year
1504 Wilson Ave	757.90								Y	100-Year
1513 Wilson Ave	757.80								Y	100-Year
1516 Elm St	755.23	H	754.59	755.22	755.66	755.83	756.00	756.40	Y	25-Year
1504 Elm St	755.88								Y	100-Year

**WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY**  
**ALTERNATIVE 4-PROPOSED CONDITIONS AT-RISK STRUCTURE TABLE**

415 Williston St	765.00	DEP7	757.40	757.71	757.87	757.99	758.14	760.30	N	--
419 Williston St	760.56								N	--
423 Williston St	760.25								Y	500-Year
502 Williston St	761.37								N	--
506 Williston St	758.22								Y	500-Year
518 Williston St	759.39								Y	500-Year
522 Williston St	759.63								Y	500-Year
528 Williston St	759.12								Y	500-Year
1119 Evergreen St	760.61								N	--
503 Williston St	759.46								Y	500-Year
507 Williston St	759.06								Y	500-Year
511 Williston St	759.64								Y	500-Year
515 Williston St	759.06								Y	500-Year
519 Williston St	759.77								Y	500-Year
523 Williston St	761.72								N	--
529 Williston St	762.15								N	--
1205 Evergreen St	761.80								N	--
410 Byron Ct	763.78								N	--
414 Byron Ct	761.40	DEP8	758.62	759.22	759.87	759.93	759.97	760.30	N	--
422 Byron Ct	762.23								N	--
418 Byron Ct	762.18								Y	500-Year
407 Byron Ct	765.24	DEP9	757.17	758.93	760.21	760.93	761.61	763.30	N	--
411 Byron Ct	765.19								N	--
415 Byron Ct	765.80								N	--
419 Byron Ct	767.37								N	--
423 Byron Ct	765.04								N	--
410 Blanchard St	764.40								N	--
414 Blanchard St	765.12								N	--
418 Blanchard St	765.00								N	--
413 Blanchard St	763.93								Y	500-Year
419 Blanchard St	765.77								N	--
402 Summit St	762.92								Y	500-Year
408 Summit St	763.59								Y	500-Year
412 Summit St	763.31								Y	500-Year
416 Summit St	763.37								Y	500-Year
422 Summit St	766.85								N	--
1502 Illinois St	766.19								N	--
407 Summit St	765.80								N	--
413 Summit St	764.94								N	--
417 Summit St	765.68								N	--
322 Blanchard St	763.31								Y	500-Year
305 Blanchard St	769.77								N	--
1315 Illinois St	765.60								N	--
1403 Illinois St	762.49								Y	100-Year
1304 Illinois St	764.80								N	--
322 Summit St	765.22								N	--
		DEP10	758.11	759.99	761.38	762.16	762.89	764.40		



**WILLISTON BASIN TRIBUTARY AREA FLOOD STUDY**  
**ALTERNATIVE 5-PROPOSED CONDITIONS AT-RISK STRUCTURE TABLE**





Alternative 1 - Pershing/Elm Improvements

Location	XP-SWMM Node	Overflow Elevation (ft)	5-yr			10-yr			25-yr			50-yr			100-yr			500-yr		
			Existing	Proposed	Change															
Peak WSEL (ft)*																				
Depression Area 1	DEP1	774.0	768.8	768.8	0.0	770.2	770.2	0.0	771.9	771.9	0.0	772.6	772.6	0.0	772.7	772.7	0.0	772.8	772.8	0.0
Depression Area 2	DEP2	775.7	768.5	768.4	-0.1	770.1	770.0	-0.1	772.0	772.0	0.0	772.7	772.7	0.0	772.9	772.9	0.0	773.0	773.0	0.0
Depression Area 3	DEP3	775.7	768.6	768.6	0.0	768.8	768.9	0.1	769.2	769.2	0.0	769.5	769.5	0.0	769.8	769.9	0.2	770.9	770.9	0.0
Depression Area 4	DEP4	775.0	770.1	770.1	0.0	770.4	770.4	0.0	770.7	770.7	0.0	771.0	771.0	0.0	771.3	771.4	0.1	772.0	772.0	0.0
Depression Area 5	DEP5	770.0	763.9	763.9	0.0	764.0	764.0	0.0	764.1	764.1	0.0	764.2	764.2	0.0	764.3	764.3	0.0	764.7	764.5	-0.1
Depression Area 6	DEP6	765.0	758.1	756.3	-1.8	758.6	757.4	-1.3	759.4	758.3	-1.1	760.0	758.9	-1.1	760.5	759.6	-0.9	761.6	760.9	-0.7
Depression Area 7	DEP7	766.3	757.9	757.6	-0.3	758.6	757.8	-0.8	759.4	758.2	-1.2	760.0	758.9	-1.1	760.5	759.6	-0.9	761.6	760.9	-0.7
Depression Area 8	DEP8	770.0	759.6	759.2	-0.4	759.9	759.7	-0.2	759.9	759.9	0.0	760.0	759.9	0.0	760.5	760.0	-0.5	761.6	760.9	-0.7
Depression Area 9	DEP9	770.0	760.4	759.5	-0.9	761.0	760.5	-0.5	761.7	761.4	-0.3	762.2	762.1	-0.2	762.8	762.7	-0.1	763.5	763.5	0.0
Depression Area 10	DEP10	765.0	761.2	760.7	-0.5	761.8	761.6	-0.2	762.5	762.4	-0.1	763.1	763.0	-0.1	763.7	763.6	0.0	764.8	764.8	0.0
Depression Area D	HEPE_9	770.0	758.9	752.3	-6.6	759.2	754.3	-4.9	759.4	756.9	-2.5	759.6	757.7	-1.9	759.8	758.5	-1.4	760.3	759.8	-0.5
Depression Area E	HEPE_1011	770.0	757.1	752.4	-4.7	757.8	754.3	-3.5	758.6	756.6	-2.0	759.3	757.4	-1.9	759.7	758.0	-1.7	760.3	759.7	-0.6
Depression Area F	HEPE_12	770.0	758.5	752.6	-5.9	758.8	753.6	-5.3	759.0	756.2	-2.9	759.2	757.7	-1.5	759.3	758.4	-1.0	760.1	759.2	-0.9
Depression Area G	Blanc_n367	770.0	757.5	751.8	-5.8	757.6	752.3	-5.3	757.7	753.8	-3.9	757.8	755.3	-2.5	758.0	756.5	-1.4	758.6	757.7	-0.9
Depression Area H	Prosp_n369	770.0	754.6	749.7	-5.0	755.3	750.2	-5.0	755.7	751.3	-4.4	755.8	752.1	-3.7	756.0	753.8	-2.2	756.6	755.5	-1.1

Alternative 2 - Pershing/Elm Improvements + Improvements along President Street

Location	XP-SWMM Node	Overflow Elevation (ft)	5-yr			10-yr			25-yr			50-yr			100-yr			500-yr		
			Peak WSEL (ft)*																	
			Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change
Depression Area 1	DEP1	774.0	768.8	768.6	-0.2	770.2	770.2	0.0	771.9	771.9	0.0	772.6	772.6	0.0	772.7	772.7	0.0	772.8	772.8	0.0
Depression Area 2	DEP2	775.7	768.5	768.4	-0.1	770.1	770.0	-0.1	772.0	771.9	-0.1	772.7	772.6	0.0	772.9	772.8	0.0	773.0	773.0	0.0
Depression Area 3	DEP3	775.7	768.6	768.5	0.0	768.8	768.8	0.0	769.2	769.2	0.0	769.5	769.5	0.0	769.8	769.8	0.0	770.9	770.9	0.0
Depression Area 4	DEP4	775.0	770.1	770.1	0.0	770.4	770.3	0.0	770.7	770.7	0.0	771.0	771.0	0.0	771.3	771.3	0.0	772.0	772.0	0.0
Depression Area 5	DEP5	770.0	763.9	757.7	-6.2	764.0	760.8	-3.2	764.1	761.6	-2.5	764.2	762.1	-2.1	764.3	762.7	-1.5	764.7	764.0	-0.6
Depression Area 6	DEP6	765.0	758.1	754.5	-3.5	758.6	757.1	-1.5	759.4	758.2	-1.2	760.0	758.8	-1.2	760.5	759.5	-1.0	761.6	760.8	-0.8
Depression Area 7	DEP7	766.3	757.9	755.0	-2.9	758.6	756.8	-1.9	759.4	758.1	-1.3	760.0	758.8	-1.2	760.5	759.5	-1.0	761.6	760.8	-0.8
Depression Area 8	DEP8	770.0	759.6	758.5	-1.2	759.9	759.2	-0.7	759.9	759.9	0.0	760.0	759.9	-0.1	760.5	760.0	-0.5	761.6	760.8	-0.8
Depression Area 9	DEP9	770.0	760.4	755.7	-4.7	761.0	759.2	-1.7	761.7	760.6	-1.1	762.2	761.2	-1.0	762.8	761.9	-0.9	763.5	763.2	-0.3
Depression Area 10	DEP10	765.0	761.2	756.1	-5.1	761.8	760.0	-1.8	762.5	761.4	-1.1	763.1	762.2	-0.9	763.7	762.8	-0.9	764.8	764.1	-0.7
Depression Area D	HEPE_9	770.0	758.9	752.9	-6.0	759.2	755.4	-3.7	759.4	757.3	-2.1	759.6	758.0	-1.6	759.8	758.7	-1.1	760.3	759.8	-0.5
Depression Area E	HEPE_1011	770.0	757.1	753.1	-4.1	757.8	755.1	-2.7	758.6	757.2	-1.4	759.3	757.8	-1.5	759.7	758.4	-1.3	760.3	759.8	-0.5
Depression Area F	HEPE_12	770.0	758.5	752.4	-6.1	758.8	753.5	-5.4	759.0	756.2	-2.9	759.2	757.7	-1.5	759.3	758.3	-1.0	760.1	759.3	-0.8
Depression Area G	Blanc_n367	770.0	757.5	751.7	-5.9	757.6	752.3	-5.3	757.7	753.8	-3.9	757.8	755.2	-2.5	758.0	756.5	-1.5	758.6	757.7	-0.9
Depression Area H	Prosp_n369	770.0	754.6	749.6	-5.0	755.3	750.3	-4.9	755.7	751.3	-4.4	755.8	752.4	-3.5	756.0	753.7	-2.3	756.6	755.6	-1.0

Alternative 3 - Buy-outs only

Location	XP-SWMM Node	Overflow Elevation (ft)	5-yr			10-yr			25-yr			50-yr			100-yr			500-yr		
			Peak WSEL (ft)*																	
			Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change
Depression Area 1	DEP1	774.0	768.8	768.6	-0.1	770.2	770.2	0.0	771.9	771.9	0.0	772.6	772.6	0.0	772.7	772.7	0.0	772.8	772.8	0.0
Depression Area 2	DEP2	775.7	768.5	768.4	-0.1	770.1	770.0	-0.1	772.0	771.9	-0.1	772.7	772.6	0.0	772.9	772.8	0.0	773.0	773.0	0.0
Depression Area 3	DEP3	775.7	768.6	768.5	0.0	768.8	768.8	0.0	769.2	769.2	0.0	769.5	769.5	0.0	769.8	769.8	0.0	770.9	770.9	0.0
Depression Area 4	DEP4	775.0	770.1	770.1	0.0	770.4	770.3	0.0	770.7	770.7	0.0	771.0	771.0	0.0	771.3	771.3	0.0	772.0	772.0	0.0
Depression Area 5	DEP5	770.0	763.9	758.2	-5.7	764.0	759.6	-4.4	764.1	761.5	-2.6	764.2	762.5	-1.7	764.3	763.0	-1.3	764.7	764.1	-0.5
Depression Area 6	DEP6	765.0	758.1	753.0	-5.0	758.6	755.7	-2.9	759.4	758.1	-1.3	760.0	759.1	-0.9	760.5	759.9	-0.6	761.6	760.8	-0.8
Depression Area 7	DEP7	766.3	757.9	757.7	-0.2	758.6	757.8	-0.8	759.4	758.1	-1.3	760.0	759.1	-0.9	760.5	759.9	-0.6	761.6	760.8	-0.8
Depression Area 8	DEP8	770.0	759.6	759.0	-0.6	759.9	759.6	-0.3	759.9	759.9	0.0	760.0	759.9	-0.1	760.5	760.0	-0.5	761.6	760.8	-0.8
Depression Area 9	DEP9	770.0	760.4	758.7	-1.6	761.0	759.6	-1.3	761.7	760.5	-1.2	762.2	761.3	-0.9	762.8	762.0	-0.8	763.5	763.4	-0.1
Depression Area 10	DEP10	765.0	761.2	759.4	-1.8	761.8	760.5	-1.3	762.5	761.5	-1.0	763.1	762.3	-0.8	763.7	763.0	-0.7	764.8	764.5	-0.3
Depression Area D	HEPE_9	770.0	758.9	758.9	0.0	759.2	759.2	0.0	759.4	759.4	0.0	759.6	759.6	0.0	759.8	759.8	0.0	760.3	760.2	-0.1
Depression Area E	HEPE_1011	770.0	757.1	756.6	-0.5	757.8	757.3	-0.5	758.6	757.9	-0.6	759.3	758.6	-0.7	759.7	759.3	-0.4	760.3	760.2	-0.1
Depression Area F	HEPE_12	770.0	758.5	758.3	-0.3	758.8	758.6	-0.2	759.0	758.9	-0.2	759.2	759.1	-0.1	759.3	759.3	-0.1	760.1	759.9	-0.2
Depression Area G	Blanc_n367	770.0	757.5	757.5	0.0	757.6	757.6	0.0	757.7	757.7	0.0	757.8	757.8	0.0	758.0	757.9	-0.1	758.6	758.4	-0.2
Depression Area H	Prosper_n369	770.0	754.6	754.6	-0.1	755.3	755.2	0.0	755.7	755.7	0.0	755.8	755.8	0.0	756.0	756.0	0.0	756.6	756.4	-0.2

Alternative 4 - Pershing/Elm Improvements + Buy-outs

Location	XP-SWMM Node	Overflow Elevation (ft)	5-yr			10-yr			25-yr			50-yr			100-yr			500-yr		
			Existing	Proposed	Change															
Peak WSEL (ft)*																				
Depression Area 1	DEP1	774.0	768.8	768.6	-0.1	770.2	770.2	0.0	771.9	771.9	0.0	772.6	772.6	0.0	772.7	772.7	0.0	772.8	772.8	0.0
Depression Area 2	DEP2	775.7	768.5	768.4	-0.1	770.1	770.0	-0.1	772.0	771.9	-0.1	772.7	772.6	0.0	772.9	772.8	0.0	773.0	773.0	0.0
Depression Area 3	DEP3	775.7	768.6	768.5	0.0	768.8	768.8	0.0	769.2	769.2	0.0	769.5	769.5	0.0	769.8	769.8	0.0	770.9	770.9	0.0
Depression Area 4	DEP4	775.0	770.1	770.1	0.0	770.4	770.3	0.0	770.7	770.7	0.0	771.0	771.0	0.0	771.3	771.3	0.0	772.0	772.0	0.0
Depression Area 5	DEP5	770.0	763.9	757.1	-6.8	764.0	758.3	-5.7	764.1	761.1	-3.0	764.2	762.3	-1.9	764.3	762.9	-1.4	764.7	764.0	-0.6
Depression Area 6	DEP6	765.0	758.1	751.7	-6.4	758.6	751.9	-6.7	759.4	754.1	-5.3	760.0	756.3	-3.6	760.5	758.0	-2.5	761.6	760.3	-1.3
Depression Area 7	DEP7	766.3	757.9	757.4	-0.5	758.6	757.7	-0.9	759.4	757.9	-1.5	760.0	758.0	-2.0	760.5	758.1	-2.4	761.6	760.3	-1.3
Depression Area 8	DEP8	770.0	759.6	758.6	-1.0	759.9	759.2	-0.7	759.9	759.9	-0.1	760.0	759.9	-0.1	760.5	760.0	-0.5	761.6	760.3	-1.3
Depression Area 9	DEP9	770.0	760.4	757.2	-3.2	761.0	758.9	-2.0	761.7	760.2	-1.5	762.2	760.9	-1.3	762.8	761.6	-1.2	763.5	763.3	-0.2
Depression Area 10	DEP10	765.0	761.2	758.1	-3.1	761.8	760.0	-1.8	762.5	761.4	-1.2	763.1	762.2	-0.9	763.7	762.9	-0.8	764.8	764.4	-0.4
Depression Area D	HEPE_9	770.0	758.9	751.9	-7.0	759.2	753.9	-5.2	759.4	756.6	-2.9	759.6	757.6	-2.0	759.8	758.3	-1.5	760.3	759.7	-0.6
Depression Area E	HEPE_1011	770.0	757.1	752.1	-5.0	757.8	753.9	-3.9	758.6	756.2	-2.4	759.3	757.1	-2.2	759.7	757.7	-2.0	760.3	759.5	-0.8
Depression Area F	HEPE_12	770.0	758.5	752.5	-6.0	758.8	753.5	-5.4	759.0	755.9	-3.1	759.2	757.6	-1.6	759.3	758.3	-1.0	760.1	759.2	-0.9
Depression Area G	Blanc_n367	770.0	757.5	751.7	-5.8	757.6	752.3	-5.3	757.7	753.7	-4.0	757.8	755.2	-2.6	758.0	756.5	-1.5	758.6	757.7	-0.9
Depression Area H	Prosp_n369	770.0	754.6	749.6	-5.0	755.3	750.2	-5.1	755.7	751.2	-4.5	755.8	752.1	-3.8	756.0	753.0	-3.0	756.6	755.5	-1.1

Alternative 5 -Pershing/Elm Improvements + Improvements along President Street+ Buy-outs

Location	XP-SWMM Node	Overflow Elevation (ft)	5-yr			10-yr			25-yr			50-yr			100-yr			500-yr		
			Peak WSEL (ft)*																	
			Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change	Existing	Proposed	Change
Depression Area 1	DEP1	774.0	768.8	768.6	-0.2	770.2	770.2	0.0	771.9	771.9	0.0	772.6	772.6	0.0	772.7	772.7	0.0	772.8	772.8	0.0
Depression Area 2	DEP2	775.7	768.5	768.4	-0.1	770.1	770.0	-0.1	772.0	771.9	-0.1	772.7	772.6	0.0	772.9	772.8	0.0	773.0	773.0	0.0
Depression Area 3	DEP3	775.7	768.6	768.5	0.0	768.8	768.8	0.0	769.2	769.2	0.0	769.5	769.5	0.0	769.8	769.8	0.0	770.9	770.9	0.0
Depression Area 4	DEP4	775.0	770.1	770.1	0.0	770.4	770.3	0.0	770.7	770.7	0.0	771.0	771.0	0.0	771.3	771.3	0.0	772.0	772.0	0.0
Depression Area 5	DEP5	770.0	763.9	757.2	-6.7	764.0	760.5	-3.5	764.1	761.5	-2.6	764.2	762.0	-2.2	764.3	762.5	-1.8	764.7	764.0	-0.6
Depression Area 6	DEP6	765.0	758.1	751.6	-6.5	758.6	751.9	-6.8	759.4	754.0	-5.5	760.0	756.5	-3.4	760.5	758.2	-2.3	761.6	760.4	-1.2
Depression Area 7	DEP7	766.3	757.9	754.4	-3.5	758.6	756.2	-2.4	759.4	757.1	-2.3	760.0	757.6	-2.4	760.5	758.2	-2.3	761.6	760.4	-1.2
Depression Area 8	DEP8	770.0	759.6	758.4	-1.2	759.9	759.0	-0.9	759.9	759.6	-0.4	760.0	759.9	-0.1	760.5	760.0	-0.6	761.6	760.4	-1.2
Depression Area 9	DEP9	770.0	760.4	755.1	-5.3	761.0	757.2	-3.7	761.7	759.2	-2.5	762.2	760.1	-2.1	762.8	760.8	-1.9	763.5	762.6	-0.9
Depression Area 10	DEP10	765.0	761.2	755.6	-5.6	761.8	757.8	-4.0	762.5	760.1	-2.5	763.1	761.1	-2.0	763.7	762.0	-1.7	764.8	763.6	-1.2
Depression Area D	HEPE_9	770.0	758.9	752.5	-6.4	759.2	754.8	-4.4	759.4	757.0	-2.5	759.6	757.7	-1.9	759.8	758.3	-1.5	760.3	759.7	-0.6
Depression Area E	HEPE_1011	770.0	757.1	752.7	-4.4	757.8	754.8	-3.0	758.6	756.7	-1.9	759.3	757.2	-2.1	759.7	757.6	-2.1	760.3	759.4	-0.9
Depression Area F	HEPE_12	770.0	758.5	752.4	-6.1	758.8	753.3	-5.6	759.0	755.9	-3.1	759.2	757.5	-1.7	759.3	758.3	-1.0	760.1	759.2	-0.9
Depression Area G	Blanc_n367	770.0	757.5	751.7	-5.9	757.6	752.2	-5.4	757.7	753.7	-4.0	757.8	755.2	-2.6	758.0	756.4	-1.5	758.6	757.7	-0.9
Depression Area H	Prosperity_n369	770.0	754.6	749.6	-5.1	755.3	750.2	-5.1	755.7	751.2	-4.4	755.8	752.1	-3.8	756.0	753.4	-2.7	756.6	755.6	-1.0

APPENDIX 3  
ASSESSOR DATA



# Milton Township Assessor Prices

Land and Building Values are based off 2017 Assessment

Address	PIN	Land Value	Building Value	Total Assessed Value	Assessor Multiplier	Market Value
<a href="#">510 Kipling Ct</a>	0515316024	\$ 19,870.00	\$ 67,780.00	\$ 87,650.00	33.33%	\$ 262,976.30
<a href="#">511 Kipling Ct</a>	0515317009	\$ 19,970.00	\$ 76,790.00	\$ 96,760.00	33.33%	\$ 290,309.03
<a href="#">804 E Indiana St</a>	0516421007	\$ 28,990.00	\$ 79,830.00	\$ 108,820.00	33.33%	\$ 326,492.65
<a href="#">710 E Evergreen St</a>	0516424002	\$ 29,800.00	\$ 42,810.00	\$ 72,610.00	33.33%	\$ 217,851.79
<a href="#">507 S President St</a>	0515316010	\$ 18,790.00	\$ 39,550.00	\$ 58,340.00	33.33%	\$ 175,037.50
<a href="#">511 S President St</a>	0515316011	\$ 18,770.00	\$ 39,470.00	\$ 58,240.00	33.33%	\$ 174,737.47
<a href="#">515 S President St</a>	0515316012	\$ 18,760.00	\$ 39,610.00	\$ 58,370.00	33.33%	\$ 175,127.51
<a href="#">419 S Williston St</a>	0515318005	\$ 20,050.00	\$ 79,470.00	\$ 99,520.00	33.33%	\$ 298,589.86
<a href="#">423 S Williston St</a>	0515318006	\$ 20,080.00	\$ 61,040.00	\$ 81,120.00	33.33%	\$ 243,384.34
<a href="#">503 S Williston St</a>	0515318007	\$ 20,110.00	\$ 54,130.00	\$ 74,240.00	33.33%	\$ 222,742.27
<a href="#">506 S Williston St</a>	0515317022	\$ 20,000.00	\$ 63,400.00	\$ 83,400.00	33.33%	\$ 250,225.02
<a href="#">507 S Williston St</a>	0515318008	\$ 20,150.00	\$ 57,310.00	\$ 77,460.00	33.33%	\$ 232,403.24
<a href="#">511 S Williston St</a>	0515318009	\$ 20,180.00	\$ 71,990.00	\$ 92,170.00	33.33%	\$ 276,537.65
<a href="#">515 S Williston St</a>	0515318010	\$ 20,210.00	\$ 50,560.00	\$ 70,770.00	33.33%	\$ 212,331.23
<a href="#">518 S Williston St</a>	0515317025	\$ 20,080.00	\$ 51,100.00	\$ 71,180.00	33.33%	\$ 213,561.36
<a href="#">519 S Williston St</a>	0515318011	\$ 20,240.00	\$ 60,990.00	\$ 81,230.00	33.33%	\$ 243,714.37
<a href="#">528 S Williston St</a>	0515317027	\$ 20,130.00	\$ 60,320.00	\$ 80,450.00	33.33%	\$ 241,374.14
<a href="#">322 S Blanchard St</a>	0515311017	\$ 18,940.00	\$ 78,510.00	\$ 97,450.00	33.33%	\$ 292,379.24
<a href="#">413 S Blanchard St</a>	0515320003	\$ 23,700.00	\$ 98,850.00	\$ 122,550.00	33.33%	\$ 367,686.77
<a href="#">402 S Summit St</a>	0515320011	\$ 29,790.00	\$ 198,320.00	\$ 228,110.00	33.33%	\$ 684,398.44
<a href="#">408 S Summit St</a>	0515320012	\$ 22,970.00	\$ 74,920.00	\$ 97,890.00	33.33%	\$ 293,699.37
<a href="#">412 S Summit St</a>	0515320013	\$ 24,690.00	\$ 79,310.00	\$ 104,000.00	33.33%	\$ 312,031.20
<a href="#">1403 E Illinois St</a>	0515312017	\$ 38,640.00	\$ 44,470.00	\$ 83,110.00	33.33%	\$ 249,354.94
<a href="#">407 S Blanchard St</a>	0515320002	\$ 23,700.00	\$ 146,100.00	\$ 169,800.00	33.33%	\$ 509,450.95
<a href="#">1402 E Illinois St</a>	0515320001	\$ 27,140.00	\$ 72,090.00	\$ 99,230.00	33.33%	\$ 297,719.77
<a href="#">406 S Blanchard St</a>	0515319016	\$ 19,920.00	\$ 50,110.00	\$ 70,030.00	33.33%	\$ 210,111.01
<a href="#">402 S Blanchard St</a>	0515319015	\$ 17,800.00	\$ 58,340.00	\$ 76,140.00	33.33%	\$ 228,442.84
<a href="#">1015 E Evergreen St</a>	0515316029	\$ 18,900.00	\$ 75,110.00	\$ 94,010.00	33.33%	\$ 282,058.21
<a href="#">528 Kipling Ct</a>	0515316028	\$ 19,470.00	\$ 76,080.00	\$ 95,550.00	33.33%	\$ 286,678.67
<a href="#">522 Kipling Ct</a>	0515316027	\$ 19,960.00	\$ 67,890.00	\$ 87,850.00	33.33%	\$ 263,576.36
<a href="#">518 Kipling Ct</a>	0515316026	\$ 19,930.00	\$ 61,080.00	\$ 81,010.00	33.33%	\$ 243,054.31
<a href="#">514 Kipling Ct</a>	0515316025	\$ 19,910.00	\$ 66,080.00	\$ 85,990.00	33.33%	\$ 257,995.80
<a href="#">1103 E Evergreen St</a>	0515317014	\$ 18,100.00	\$ 52,470.00	\$ 70,570.00	33.33%	\$ 211,731.17
<a href="#">529 Kipling Ct</a>	0515317013	\$ 19,860.00	\$ 112,850.00	\$ 132,710.00	33.33%	\$ 398,169.82
<a href="#">523 Kipling Ct</a>	0515317012	\$ 19,900.00	\$ 56,040.00	\$ 75,940.00	33.33%	\$ 227,842.78
<a href="#">519 Kipling Ct</a>	0515317011	\$ 19,920.00	\$ 47,780.00	\$ 67,700.00	33.33%	\$ 203,120.31

# Milton Township Property Information

 **Milton Township**  
**Assessor's Office**

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## Property Information

Parcel Number: 05-16-424-002

Address: 710 E EVERGREEN ST

City: WHEATON

Gross Living Area SF: 1,073

Lot Total SF (est.): 10,841

Total Acres (est.): 0.2489

Style: Ranch

Construction: Masonry

Year Built: 1957

Full Baths: 1

Half Baths: 0

Basement Area SF: 1,073

Basement Finished: No

Garage Type: Detached

Garage Area SF: 352

CAC: Yes

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NBHD Code: 068d

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	29,800	42,810	72,610	5012	7.4217	\$4,943.60
2016	Normal	28,610	41,100	69,710	5012	7.6433	\$4,869.56
2015	Normal	27,290	39,210	66,500	5012	7.9701	\$4,821.92

## Recent Sales Information

Sale Date	Sale Price	Deed Type
05 / 2014	\$212,500	W

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-316-029

Address: 1015 E EVERGREEN ST

City: WHEATON

Gross Living Area SF: 1,209

Lot Total SF (est.): 6,878

Total Acres (est.): 0.1579

Style: Ranch

Construction: Masonry

Year Built: 1970

Full Baths: 1

Half Baths: 1

Basement Area SF: 1,209

Basement Finished: No

Garage Type: Detached

Garage Area SF: 484

CAC: Yes

NBHD Code: 068

Property Class: R

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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	18,900	75,110	94,010	5012	7.4217	\$6,531.84
2016	Normal	18,140	72,110	90,250	5012	7.6433	\$6,439.48
2015	Normal	17,310	59,510	76,820	5012	7.9701	\$5,644.44

### Recent Sales Information

Sale Date	Sale Price	Deed Type
04 / 2014	\$269,900	W
01 / 2014	\$170,100	O


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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-014

Address: 1103 E EVERGREEN ST

City: WHEATON

Gross Living Area SF: 1,061

Lot Total SF (est.): 6,585

Total Acres (est.): 0.1512

Style: Ranch

Construction: Frame

Year Built: 1955

Full Baths: 1

Half Baths: 0

Basement Area SF: 1,061

Basement Finished: No

Garage Type: Detached

Garage Area SF: 273

CAC: No

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	18,100	52,470	70,570	5012	7.4217	\$4,792.20
2016	Normal	17,380	50,370	67,750	5012	7.6433	\$4,719.74
2015	Normal	16,580	48,050	64,630	5012	7.9701	\$4,672.88

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-320-001

Address: 1402 E ILLINOIS ST

City: WHEATON

Gross Living Area SF: 1,716

Lot Total SF (est.): 9,876

Total Acres (est.): 0.2267

Style: Ranch

Construction: Frame

Year Built: 1950

Full Baths: 2

Half Baths: 0

Basement Area SF: 0

Basement Finished: No

Garage Type: Detached

Garage Area SF: 480

CAC: Yes

NBHD Code: 068

Property Class: L

### Photograph



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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	27,140	72,090	99,230	5012	7.4217	\$7,364.56
2016	Normal	26,060	69,210	95,270	5012	7.6433	\$7,281.78
2015	Normal	24,860	66,030	90,890	5012	7.9701	\$6,765.82

### Recent Sales Information

No recent sales on file

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# Milton Township Property Information

 **Milton Township**  
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## Property Information

Parcel Number: 05-15-312-017

Address: 1403 E ILLINOIS ST

City: WHEATON

Gross Living Area SF: 932

Lot Total SF (est.): 15,086

Total Acres (est.): 0.3463

Style: Ranch

Construction: Frame

Year Built: 1950

Full Baths: 1

Half Baths: 1

Basement Area SF: 0

Basement Finished: No

Garage Type: Attached

Garage Area SF: 420

CAC: No

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NBHD Code: 068

Property Class: L

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	38,640	44,470	83,110	5012	7.4217	\$6,168.18
2016	Normal	37,100	42,690	79,790	5012	7.6433	\$6,098.60
2015	Normal	35,390	40,730	76,120	5012	7.9701	\$6,066.84

## Recent Sales Information

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-16-421-007

Address: 804 E INDIANA ST

City: WHEATON

Gross Living Area SF: 1,677

Lot Total SF (est.): 10,544

Total Acres (est.): 0.2421

Style: Ranch

Construction: Frame and Masonry

Year Built: 1950

Full Baths: 2

Half Baths: 0

Basement Area SF: 1,437

Basement Finished: Yes

Garage Type: Basement

Garage Area SF: 1

CAC: Yes

NBHD Code: 068

Property Class: R

### Photograph



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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	28,990	79,830	108,820	5012	7.4217	\$7,259.92
2016	Normal	27,830	76,640	104,470	5012	7.6433	\$7,526.36
2015	Normal	26,550	73,120	99,670	5012	7.9701	\$7,465.60

### Recent Sales Information

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-316-024

Address: 510 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,032

Lot Total SF (est.): 7,231

Total Acres (est.): 0.1660

Style: Split Level

Construction: Frame and Masonry

Year Built: 1957

Full Baths: 2

Half Baths: 0

Basement Area SF: 506

Basement Finished: Yes

Garage Type: 1 Story

Garage Area SF: 170

CAC: Yes

NBHD Code: 068

Property Class: L

### Photograph



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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,870	67,780	87,650	5012	7.4217	\$6,505.12
2016	Normal	19,080	53,040	72,120	5012	7.6433	\$5,053.76
2015	Normal	18,200	50,600	68,800	5012	7.9701	\$4,606.72

### Recent Sales Information

Sale Date	Sale Price	Deed Type
06 / 2017	\$322,000	W
12 / 2015	\$165,000	W

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-009

Address: 511 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,200

Lot Total SF (est.): 7,266

Total Acres (est.): 0.1668

Style: Split Level

Construction: Frame

Year Built: 1981

Full Baths: 2

Half Baths: 1

Basement Area SF: 1,200

Basement Finished: Yes

Garage Type: Attached

Garage Area SF: 528

CAC: Yes

NBHD Code: 068

Property Class: R

### Photograph



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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,970	76,790	96,760	5012	7.4217	\$6,735.94
2016	Normal	19,170	73,720	92,890	5012	7.6433	\$6,641.28
2015	Normal	18,290	70,330	88,620	5012	7.9701	\$6,584.90

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-316-025

Address: 514 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,209

Lot Total SF (est.): 7,241

Total Acres (est.): 0.1662

Style: Ranch

Construction: Masonry

Year Built: 1971

Full Baths: 1

Half Baths: 1

Basement Area SF: 1,209

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 528

CAC: Yes

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,910	66,080	85,990	5012	7.4217	\$5,936.62
2016	Normal	19,110	63,440	82,550	5012	7.6433	\$5,850.96
2015	Normal	18,230	60,520	78,750	5012	7.9701	\$5,798.26

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-316-026

Address: 518 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,209

Lot Total SF (est.): 7,250

Total Acres (est.): 0.1664

Style: Ranch

Construction: Masonry

Year Built: 1971

Full Baths: 2

Half Baths: 1

Basement Area SF: 1,209

Basement Finished: No

Garage Type:

Garage Area SF: 0

CAC: No

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,930	61,080	81,010	5012	7.4217	\$5,567.02
2016	Normal	19,130	58,640	77,770	5012	7.6433	\$5,485.60
2015	Normal	18,250	55,940	74,190	5012	7.9701	\$5,434.82

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-011

Address: 519 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,232

Lot Total SF (est.): 7,246

Total Acres (est.): 0.1663

Style: Split Level

Construction: Masonry

Year Built: 1957

Full Baths: 1

Half Baths: 1

Basement Area SF: 616

Basement Finished: Yes

Garage Type:

Garage Area SF: 0

CAC: Yes

NBHD Code: 068

Property Class: L

### Photograph

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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,920	47,780	67,700	5012	7.4217	\$5,024.50
2016	Normal	19,120	45,870	64,990	5012	7.6433	\$4,508.80
2015	Normal	18,240	43,760	62,000	5012	7.9701	\$4,463.26

### Recent Sales Information

Sale Date	Sale Price	Deed Type
04 / 2015	\$95,000	W


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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-316-027

Address: 522 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,209

Lot Total SF (est.): 7,260

Total Acres (est.): 0.1667

Style: Ranch

Construction: Masonry

Year Built: 1971

Full Baths: 2

Half Baths: 1

Basement Area SF: 1,209

Basement Finished: No

Garage Type: Detached

Garage Area SF: 484

CAC: No

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,960	67,890	87,850	5012	7.4217	\$6,074.68
2016	Normal	19,160	65,180	84,340	5012	7.6433	\$5,987.78
2015	Normal	18,280	62,180	80,460	5012	7.9701	\$5,934.54

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-012

Address: 523 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,350

Lot Total SF (est.): 7,236

Total Acres (est.): 0.1661

Style: Ranch

Construction: Frame

Year Built: 1949

Full Baths: 2

Half Baths: 0

Basement Area SF: 675

Basement Finished: No

Garage Type:

Garage Area SF: 0

CAC: No

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,900	56,040	75,940	5012	7.4217	\$5,190.74
2016	Normal	19,100	53,800	72,900	5012	7.6433	\$5,113.38
2015	Normal	18,220	51,330	69,550	5012	7.9701	\$5,065.00

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-316-028

Address: 528 KIPLING CT

City: WHEATON

Gross Living Area SF: 1,209

Lot Total SF (est.): 7,086

Total Acres (est.): 0.1627

Style: Ranch

Construction: Masonry

Year Built: 1971

Full Baths: 1

Half Baths: 1

Basement Area SF: 1,209

Basement Finished: No

Garage Type: Detached

Garage Area SF: 528

CAC: Yes

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NBHD Code: 068

Property Class: R

### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,470	76,080	95,550	5012	7.4217	\$6,646.14
2016	Normal	18,690	73,040	91,730	5012	7.6433	\$6,552.62
2015	Normal	17,830	60,400	78,230	5012	7.9701	\$5,756.82

### Recent Sales Information

Sale Date	Sale Price	Deed Type	Privacy - Terms
01 / 2017	\$292,000	W	
04 / 2014	\$271,000	W	
02 / 2014	\$170,000	W	


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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-013

Address: 529 KIPLING CT

City: WHEATON

Gross Living Area SF: 2,243

Lot Total SF (est.): 7,226

Total Acres (est.): 0.1659

Style: 1.5 Story

Construction: Frame

Year Built: 1974

Full Baths: 3

Half Baths: 0

Basement Area SF: 1,118

Basement Finished: Yes

Garage Type: Attached

Garage Area SF: 390

CAC: Yes

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,860	112,850	132,710	5012	7.4217	\$9,404.04
2016	Normal	19,070	108,340	127,410	5012	7.6433	\$9,279.74
2015	Normal	18,190	103,360	121,550	5012	7.9701	\$9,209.46

### Recent Sales Information

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# Milton Township Property Information

 **Milton Township**  
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## Property Information

Parcel Number: 05-15-311-017

Address: 322 S BLANCHARD ST

City: WHEATON

Gross Living Area SF: 1,592

Lot Total SF (est.): 6,890

Total Acres (est.): 0.1582

Style: Ranch

Construction: Frame

Year Built: 1954

Full Baths: 1

Half Baths: 1

Basement Area SF: 0

Basement Finished: No

Garage Type: Attached

Garage Area SF: 352

CAC: Yes

NBHD Code: 068

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	18,940	78,510	97,450	5012	7.4217	\$6,787.16
2016	Normal	18,180	75,370	93,550	5012	7.6433	\$6,691.72
2015	Normal	17,340	71,900	89,240	5012	7.9701	\$6,634.32

## Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-319-015

Address: 402 S BLANCHARD ST

City: WHEATON

Gross Living Area SF: 1,190

Lot Total SF (est.): 6,474

Total Acres (est.): 0.1486

Style: Ranch

Construction: Frame

Year Built: 1956

Full Baths: 1

Half Baths: 1

Basement Area SF: 1,190

Basement Finished: No

Garage Type: Detached

Garage Area SF: 528

CAC: No

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	17,800	58,340	76,140	5012	7.4217	\$5,205.58
2016	Normal	17,090	56,010	73,100	5012	7.6433	\$5,128.66
2015	Normal	16,300	53,430	69,730	5012	7.9701	\$5,079.36

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-319-016

Address: 406 S BLANCHARD ST

City: WHEATON

Gross Living Area SF: 1,044

Lot Total SF (est.): 7,244

Total Acres (est.): 0.1663

Style: Ranch

Construction: Masonry

Year Built: 1955

Full Baths: 1

Half Baths: 0

Basement Area SF: 0

Basement Finished: No

Garage Type: Detached

Garage Area SF: 440

CAC: No

NBHD Code: 068

Property Class: R

### Photograph


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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	19,920	50,110	70,030	5012	7.4217	\$4,752.12
2016	Normal	19,120	48,110	67,230	5012	7.6433	\$4,680.00
2015	Normal	18,240	45,900	64,140	5012	7.9701	\$4,633.82

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: **05-15-320-002**

Address: **407 S BLANCHARD ST**

City: **WHEATON**

Gross Living Area SF: **2,666**

Lot Total SF (est.): **8,622**

Total Acres (est.): **0.1979**

Style: **2.0 Story**

Construction: **Frame**

Year Built: **1988**

Full Baths: **2**

Half Baths: **1**

Basement Area SF: **1,333**

Basement Finished: **No**

Garage Type: **Attached**

Garage Area SF: **504**

CAC: **Yes**

NBHD Code: **068**

Property Class: **R**

### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	23,700	146,100	169,800	5012	7.4217	\$12,156.76
2016	Normal	22,750	144,020	166,770	5012	7.6433	\$12,288.14
2015	Normal	21,700	137,400	159,100	5012	7.9701	\$12,202.24

### Recent Sales Information

No recent sales on file

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# Milton Township Property Information

 **Milton Township**  
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## Property Information

Parcel Number: 05-15-320-003

Address: 413 S BLANCHARD ST

City: WHEATON

Gross Living Area SF: 2,320

Lot Total SF (est.): 8,620

Total Acres (est.): 0.1979

Style: 2.0 Story

Construction: Frame

Year Built: 1954

Full Baths: 2

Half Baths: 0

Basement Area SF: 1,275

Basement Finished: Yes

Garage Type:

Garage Area SF: 0

CAC: Yes

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NBHD Code: 068

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	23,700	98,850	122,550	5012	7.4217	\$6,272.08
2016	Normal	22,750	94,900	117,650	5012	7.6433	\$6,459.36
2015	Normal	21,700	90,540	112,240	5012	7.9701	\$6,735.54

## Recent Sales Information

No recent sales on file

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# Milton Township Property Information

 **Milton Township  
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## Property Information

Parcel Number: 05-15-316-010

Address: 507 S PRESIDENT ST

City: WHEATON

Gross Living Area SF: 837

Lot Total SF (est.): 7,596

Total Acres (est.): 0.1744

Style: Ranch

Construction: Masonry

Year Built: 1948

Full Baths: 1

Half Baths: 0

Basement Area SF: 837

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 440

CAC: Yes

NBHD Code: 068e

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	18,790	39,550	58,340	5012	7.4217	\$3,513.44
2016	Normal	18,040	37,970	56,010	5012	7.6433	\$3,440.26
2015	Normal	17,210	36,220	53,430	5012	7.9701	\$3,780.22

## Recent Sales Information

No recent sales on file

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# Milton Township Property Information

 **Milton Township**  
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## Property Information

Parcel Number: 05-15-316-011

Address: 511 S PRESIDENT ST

City: WHEATON

Gross Living Area SF: 884

Lot Total SF (est.): 7,589

Total Acres (est.): 0.1742

Style: Ranch

Construction: Masonry

Year Built: 1948

Full Baths: 1

Half Baths: 0

Basement Area SF: 884

Basement Finished: No

Garage Type: Detached

Garage Area SF: 315

CAC: Yes

NBHD Code: 068e

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	18,770	39,470	58,240	5012	7.4217	\$3,877.10
2016	Normal	18,020	37,890	55,910	5012	7.6433	\$3,814.78
2015	Normal	17,190	36,150	53,340	5012	7.9701	\$3,773.06

## Recent Sales Information

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# Milton Township Property Information

 **Milton Township**  
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## Property Information

Parcel Number: 05-15-316-012

Address: 515 S PRESIDENT ST

City: WHEATON

Gross Living Area SF: 925

Lot Total SF (est.): 7,582

Total Acres (est.): 0.1741

Style: Ranch

Construction: Masonry

Year Built: 1948

Full Baths: 1

Half Baths: 0

Basement Area SF: 925

Basement Finished: No

Garage Type: Detached

Garage Area SF: 308

CAC: Yes

NBHD Code: 068e

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	18,760	39,610	58,370	5012	7.4217	\$3,886.76
2016	Normal	18,010	38,030	56,040	5012	7.6433	\$3,824.72
2015	Normal	17,180	36,280	53,460	5012	7.9701	\$3,782.62

## Recent Sales Information

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# Milton Township Property Information

 **Milton Township**  
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## Property Information

Parcel Number: 05-15-320-011

Address: 402 S SUMMIT ST

City: WHEATON

Gross Living Area SF: 3,354

Lot Total SF (est.): 10,838

Total Acres (est.): 0.2488

Style: 2.0 Story

Construction: Frame

Year Built: 2007

Full Baths: 3

Half Baths: 1

Basement Area SF: 1,581

Basement Finished: No

Garage Type: Attached

Garage Area SF: 546

CAC: Yes

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NBHD Code: 068a

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	29,790	198,320	228,110	5012	7.4217	\$16,484.34
2016	Normal	28,600	190,400	219,000	5012	7.6433	\$16,280.24
2015	Normal	27,280	181,640	208,920	5012	7.9701	\$16,172.94

## Recent Sales Information

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# Milton Township Property Information

 **Milton Township  
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## Property Information

Parcel Number: 05-15-320-012

Address: 408 S SUMMIT ST

City: WHEATON

Gross Living Area SF: 1,404

Lot Total SF (est.): 8,358

Total Acres (est.): 0.1919

Style: Ranch

Construction: Masonry

Year Built: 1958

Full Baths: 1

Half Baths: 1

Basement Area SF: 1,404

Basement Finished: Yes

Garage Type: Attached

Garage Area SF: 540

CAC: Yes

NBHD Code: 068

Property Class: R

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## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	22,970	74,920	97,890	5012	7.4217	\$7,265.12
2016	Normal	22,050	71,930	93,980	5012	7.6433	\$7,183.18
2015	Normal	21,040	68,620	89,660	5012	7.9701	\$7,146.00

## Recent Sales Information

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# Milton Township Property Information

 **Milton Township  
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## Property Information

Parcel Number: 05-15-320-013

Address: 412 S SUMMIT ST

City: WHEATON

Gross Living Area SF: 1,632

Lot Total SF (est.): 8,980

Total Acres (est.): 0.2062

Style: 2.0 Story

Construction: Frame

Year Built: 1952

Full Baths: 1

Half Baths: 1

Basement Area SF: 816

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 330

CAC: Yes

NBHD Code: 068

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	24,690	79,310	104,000	5012	7.4217	\$7,273.28
2016	Normal	23,700	76,140	99,840	5012	7.6433	\$7,172.48
2015	Normal	22,610	72,640	95,250	5012	7.9701	\$7,113.32

## Recent Sales Information

No recent sales on file

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# Milton Township Property Information

 **Milton Township**  
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## Property Information

Parcel Number: 05-15-318-005

Address: 419 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,100

Lot Total SF (est.): 7,295

Total Acres (est.): 0.1675

Style: Ranch

Construction: Frame

Year Built: 1957

Full Baths: 1

Half Baths: 1

Basement Area SF: 945

Basement Finished: Yes

Garage Type:

Garage Area SF: 336

CAC: Yes

NBHD Code: 068

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,050	79,470	99,520	5012	7.4217	\$5,469.06
2016	Normal	19,250	76,300	95,550	5012	7.6433	\$5,389.30
2015	Normal	18,360	50,690	69,050	5012	7.9701	\$5,025.16

## Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-318-006

Address: 423 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 999

Lot Total SF (est.): 7,307

Total Acres (est.): 0.1677

Style: Split Level

Construction: Frame and Masonry

Year Built: 1958

Full Baths: 1

Half Baths: 0

Basement Area SF: 500

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 440

CAC: Yes

NBHD Code: 068

Property Class: R

### Photograph



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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,080	61,040	81,120	5012	7.4217	\$5,575.20
2016	Normal	19,280	49,140	68,420	5012	7.6433	\$4,770.96
2015	Normal	18,390	46,880	65,270	5012	7.9701	\$4,723.88

### Recent Sales Information

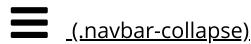
Sale Date	Sale Price	Deed Type
07 / 2016	\$230,000	W

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-318-007

Address: 503 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,148

Lot Total SF (est.): 7,319

Total Acres (est.): 0.1680

Style: Ranch

Construction: Frame

Year Built: 1957

Full Baths: 1

Half Baths: 0

Basement Area SF: 1,274

Basement Finished: No

Garage Type: Attached

Garage Area SF: 252

CAC: No

NBHD Code: 068

Property Class: R

### Photograph



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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,110	54,130	74,240	5012	7.4217	\$5,064.58
2016	Normal	19,310	51,970	71,280	5012	7.6433	\$4,989.56
2015	Normal	18,420	49,580	68,000	5012	7.9701	\$4,941.48

### Recent Sales Information

No recent sales on file

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-022

Address: 506 WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,035

Lot Total SF (est.): 7,276

Total Acres (est.): 0.1670

Style: Split Level

Construction: Frame and Masonry

Year Built: 1960

Full Baths: 2

Half Baths: 0

Basement Area SF: 518

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 484

CAC: Yes

NBHD Code: 068

Property Class: R

### Photograph



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### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,000	63,400	83,400	5012	7.4217	\$5,744.40
2016	Normal	19,200	60,870	80,070	5012	7.6433	\$5,661.40
2015	Normal	18,320	58,070	76,390	5012	7.9701	\$5,610.16

### Recent Sales Information

No recent sales on file

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# Milton Township Property Information

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## Property Information

Parcel Number: 05-15-318-008

Address: 507 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,025

Lot Total SF (est.): 7,331

Total Acres (est.): 0.1683

Style: Ranch

Construction: Frame

Year Built: 1955

Full Baths: 1

Half Baths: 1

Basement Area SF: 1,025

Basement Finished: Yes

Garage Type: Attached

Garage Area SF: 252

CAC: Yes

NBHD Code: 068

Property Class: R

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## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,150	57,310	77,460	5012	7.4217	\$5,303.56
2016	Normal	19,340	55,020	74,360	5012	7.6433	\$5,224.96
2015	Normal	18,450	52,490	70,940	5012	7.9701	\$5,175.80

## Recent Sales Information

No recent sales on file

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# Milton Township Property Information

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## Property Information

Parcel Number: 05-15-318-009

Address: 511 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,252

Lot Total SF (est.): 7,343

Total Acres (est.): 0.1686

Style: Ranch

Construction: Frame

Year Built: 1955

Full Baths: 2

Half Baths: 0

Basement Area SF: 1,028

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 308

CAC: Yes

NBHD Code: 068

Property Class: R

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## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,180	71,990	92,170	5012	7.4217	\$6,395.28
2016	Normal	19,370	69,110	88,480	5012	7.6433	\$6,762.80
2015	Normal	18,480	57,400	75,880	5012	7.9701	\$6,047.72

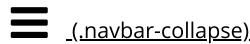
## Recent Sales Information

Sale Date	Sale Price	Deed Type
01 / 2014	\$255,500	W

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*Although it is periodically updated, this information may not reflect the data currently on file in the Assessor's office. The assessed values may NOT be certified values and therefore may be subject to change before being finalized for ad valorem assessment purposes.*



## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-318-010

Address: 515 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 864

Lot Total SF (est.): 7,355

Total Acres (est.): 0.1688

Style: Raised Ranch

Construction: Frame

Year Built: 1961

Full Baths: 1

Half Baths: 1

Basement Area SF: 864

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 440

CAC: No

NBHD Code: 068

Property Class: R

### Photograph



[View Parcel On DuPage County GIS Map](#)

### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,210	50,560	70,770	5012	7.4217	\$4,435.96
2016	Normal	19,400	48,540	67,940	5012	7.6433	\$4,352.10
2015	Normal	18,510	46,310	64,820	5012	7.9701	\$4,289.52

### Recent Sales Information

No recent sales on file

\* NEW \* - [Click here to view recent sales in this neighborhood \(NBHDRecentSales.aspx\)](#)

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**Milton Township  
Assessor's Office**

[\(.navbar-collapse\)](#)

## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-025

Address: 518 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,247

Lot Total SF (est.): 7,306

Total Acres (est.): 0.1677

Style: Split Level

Construction: Frame

Year Built: 1961

Full Baths: 1

Half Baths: 1

Basement Area SF: 416

Basement Finished: Yes

Garage Type: Detached

Garage Area SF: 440

CAC: Yes

NBHD Code: 068

Property Class: R

### Photograph



[View Parcel On DuPage County GIS Map](#)

### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,080	51,100	71,180	5012	7.4217	\$4,837.48
2016	Normal	19,280	49,050	68,330	5012	7.6433	\$4,764.08
2015	Normal	18,390	54,890	73,280	5012	7.9701	\$5,362.30

### Recent Sales Information

Sale Date	Sale Price	Deed Type
06 / 2015	\$205,000	T

\* NEW \* - [Click here to view recent sales in this neighborhood \(NBHDRecentSales.aspx\)](#)

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# Milton Township Property Information

 **Milton Township  
Assessor's Office**

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## Property Information

Parcel Number: 05-15-318-011

Address: 519 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,091

Lot Total SF (est.): 7,367

Total Acres (est.): 0.1691

Style: 1.5 Story

Construction: Frame and Masonry

Year Built: 1947

Full Baths: 1

Half Baths: 0

Basement Area SF: 727

Basement Finished: No

Garage Type: Detached

Garage Area SF: 360

CAC: No

☰ **Photograph**  
(.navbar-collapse)



[View Parcel On DuPage County GIS Map](#)

NBHD Code: 068

Property Class: R

## Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,240	60,990	81,230	5012	7.4217	\$5,583.36
2016	Normal	19,430	58,550	77,980	5012	7.6433	\$5,501.66
2015	Normal	18,540	55,860	74,400	5012	7.9701	\$5,451.56

## Recent Sales Information

Sale Date	Sale Price	Deed Type
11 / 2016	\$210,500	W

\* NEW \* - [Click here to view recent sales in this neighborhood \(NBHDRecentSales.aspx\)](#)

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## Milton Township Property Information

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### Property Information

Parcel Number: 05-15-317-027

Address: 528 S WILLISTON ST

City: WHEATON

Gross Living Area SF: 1,032

Lot Total SF (est.): 7,326

Total Acres (est.): 0.1682

Style: Split Level

Construction: Frame and Masonry

Year Built: 1956

Full Baths: 1

Half Baths: 0

Basement Area SF: 516

Basement Finished: No

Garage Type: Detached

Garage Area SF: 576

CAC: Yes

NBHD Code: 068

Property Class: L

### Photograph



[View Parcel On DuPage County GIS Map](#)

### Assessment Information

Year	Assessment Type	Land Value	Building Value	Total Assessed Value	Tax Code	Tax Rate	Tax Amount
2017	Normal	20,130	60,320	80,450	5012	7.4217	\$5,970.76
2016	Normal	19,330	57,910	77,240	5012	7.6433	\$5,903.70
2015	Normal	18,440	55,250	73,690	5012	7.9701	\$5,873.18

### Recent Sales Information

No recent sales on file

\* NEW \* - [Click here to view recent sales in this neighborhood \(NBHDRecentSales.aspx\)](#)

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## APPENDIX 4

### ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST (EOPCC)



Client: Joe Tebrugge  
 City of Wheaton  
 303 West Wesley Street  
 Wheaton, Illinois 60187  
 Phone: 630-848-5010  
 Email: [jtebrugge@wheaton.il.us](mailto:jtebrugge@wheaton.il.us)

Job Name: Flood Study  
 Williston Basin  
 Date of Plans: N/A  
 Revision Date: N/A  
 Project #: 12045.01  
 Date: 10/8/2018

## ALTERNATIVE 2

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
<b>GENERAL CONDITIONS</b>					
67100100	MOBILIZATION (10%)	L SUM	1	--	\$ 217,000.00
	UNDERCUTTING & BACKFILL FOR UTILITIES (10% AT 3.0')	CY	321	\$ 90.00	\$ 28,890.00
	MAINTENANCE OF TRAFFIC	L SUM	1	\$ 100,000.00	\$ 100,000.00
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	EACH	31	\$ 50.00	\$ 1,550.00
20101200	TREE ROOT PRUNING	L SUM	1	\$ 1,500.00	\$ 1,500.00
44000100	PAVEMENT REMOVAL	SQ YD	2209	\$ 17.00	\$ 37,553.00
44000500	COMBINATION CURB AND GUTTER REMOVAL	FOOT	3460	\$ 6.00	\$ 20,760.00
44000600	SIDEWALK REMOVAL	SQ FT	1635	\$ 4.00	\$ 6,540.00
<b>SEWER INSTALLATION</b>					
	STORM SEWERS, 18"	FOOT	283	\$ 120.00	\$ 33,960.00
	STORM SEWERS, 24"	FOOT	519	\$ 130.00	\$ 67,470.00
	STORM SEWERS, 48"	FOOT	2925	\$ 175.00	\$ 511,840.00
	STORM SEWERS, 60"	FOOT	334	\$ 225.00	\$ 75,150.00
	SPOIL REMOVAL	CU YD	9436	\$ 45.00	\$ 424,620.00
20800150	TRENCH BACKFILL	CU YD	9436	\$ 50.00	\$ 471,800.00
55100400	STORM SEWER REMOVAL 10"	FOOT	379	\$ 20.00	\$ 7,580.00
55100700	STORM SEWER REMOVAL 15"	FOOT	338	\$ 25.00	\$ 8,450.00
55100900	STORM SEWER REMOVAL 18"	FOOT	85	\$ 28.00	\$ 2,380.00
55101600	STORM SEWER REMOVAL 36"	FOOT	1732	\$ 50.00	\$ 86,599.00
55101900	STORM SEWER REMOVAL 48"	FOOT	334	\$ 60.00	\$ 20,019.00
60200105	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, OPEN LID	EACH	8	\$ 20.00	\$ 160.00
	CATCH BASINS, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, OPEN LID	EACH	1	\$ 28.00	\$ 28.00
	CATCH BASINS, TYPE A, 8'-DIAMETER, TYPE 1 FRAME, OPEN LID	EACH	1	\$ 60.00	\$ 60.00
60218400	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	\$ 3,300.00	\$ 3,300.00
60221100	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	\$ 4,000.00	\$ 4,000.00
60223800	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	4	\$ 5,000.00	\$ 20,000.00
60224446	MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	\$ 7,000.00	\$ 7,000.00
60224459	MANHOLES, TYPE A, 8'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1	\$ 15,000.00	\$ 15,000.00
60603800	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12	FOOT	2209	\$ 23.00	\$ 50,807.00
	TIDEFLEX CHECK VALVE, 24"	EACH	2	\$ 15,000.00	\$ 30,000.00
<b>RESTORATION</b>					
25200100	SOD INSTALLATION	SQ YD	649	\$ 12.00	\$ 7,788.00
42400300	PORTLAND CEMENT CONCRETE SIDEWALK 6 INCH	SQ FT	1635	\$ 10.00	\$ 16,350.00
	ROADWAY BASE, 10" CA-6	SQ YD	519	\$ 8.00	\$ 4,152.00
	ROADWAY PAVEMENT	SQ YD	519	\$ 95.00	\$ 49,305.00
	RESIDENTIAL DRIVEWAY R&R COMPLETE	SQ YD	516	\$ 60.00	\$ 30,960.00
	PARKWAY TREE INSTALLATION	EACH	31	\$ 650.00	\$ 20,150.00
CONSTRUCTION SUBTOTAL \$ 2,382,721.00					
CONTINGENCY (20%) \$ 476,544.00					
DESIGN ENGINEERING & PERMITTING (8%) \$ 190,618.00					
CONSTRUCTION ENGINEERING (8%) \$ 190,618.00					
<b>GRAND TOTAL \$ 3,240,501.00</b>					

Notes:

- 1) This is a conceptual estimate. Actual quantities and scope for the project will be determined during final engineering design.
- 2) The concept estimate does not include costs for ROW acquisition or temporary easements.

The Following is specifically excluded from this estimate:

- 1) Bonds, permits, special insurance (waiver of subrogation, pollution liability insurance), and testing including QC/QA.
- 2) The demolition or handling of any petroleum contaminated soil, gas tanks, gas pumps etc.
- 3) Removal of buried or above ground petroleum underground storage tanks
- 4) Repair or restoration of asphalt roadways or paths that may need to be crossed with truck traffic for access to loading point.
- 5) The handling or disposal of hazardous materials or non-hazardous special waste material.
- 6) Compaction or Material Testing.
- 7) Winter Conditions or Lime Stabilization of Subgrades unless noted otherwise.
- 8) Dry Utility Relocates

Client: Joe Tebrugge  
City of Wheaton  
303 West Wesley Street  
Wheaton, Illinois 60187

Phone: 630-848-5010

Email: [jtebrugge@wheaton.il.us](mailto:jtebrugge@wheaton.il.us)

Job Name: Flood Study  
Williston Basin  
Date of Plans: N/A  
Revision Date: N/A  
Project #: 12045.01  
Date: 10/8/2018

### **ALTERNATIVE 3**

#### ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
<b>GENERAL CONDITIONS</b>					
67100100	MOBILIZATION (10%)	L SUM	1	—	\$ 123,000.00
	UNDERCUTTING & BACKFILL FOR UTILITIES (10% AT 3.0)	CY	65	\$ 90.00	\$ 5,850.00
	MAINTENANCE OF TRAFFIC	L SUM	1	\$ 20,000.00	\$ 20,000.00
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	EACH	7	\$ 50.00	\$ 350.00
20101200	TREE ROOT PRUNING	L SUM	1	\$ 1,500.00	\$ 1,500.00
44000100	PAVEMENT REMOVAL	SQ YD	226	\$ 17.00	\$ 3,842.00
44000500	COMBINATION CURB AND GUTTER REMOVAL	FOOT	967	\$ 6.00	\$ 5,802.00
44000600	SIDEWALK REMOVAL	SQ FT	220	\$ 4.00	\$ 880.00
<b>SEWER INSTALLATION</b>					
	STORM SEWERS, 12"	FOOT	181	\$ 110.00	\$ 19,910.00
	STORM SEWERS, 24"	FOOT	928	\$ 130.00	\$ 120,640.00
	SPOL REMOVAL	CU YD	1536	\$ 45.00	\$ 69,120.00
20800150	TRENCH BACKFILL	CU YD	1536	\$ 50.00	\$ 76,800.00
54213657	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 12"	EACH	3	\$ 1,500.00	\$ 4,500.00
54213669	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 24"	EACH	2	\$ 2,000.00	\$ 4,000.00
55100400	STORM SEWER REMOVAL 10"	FOOT	314	\$ 20.00	\$ 6,284.00
55100700	STORM SEWER REMOVAL 15"	FOOT	338	\$ 25.00	\$ 8,450.00
60200105	CATCH BASINS, TYPE A, 4"-DIAMETER, TYPE 1 FRAME, OPEN LID	EACH	7	\$ 3,000.00	\$ 21,000.00
	CATCH BASINS, TYPE A, 7"-DIAMETER, TYPE 1 FRAME, OPEN LID	EACH	1	\$ 7,000.00	\$ 7,000.00
60218400	MANHOLES, TYPE A, 4"-DIAMETER	EACH	3	\$ 3,300.00	\$ 9,900.00
60221100	MANHOLES, TYPE A, 5"-DIAMETER	EACH	1	\$ 4,000.00	\$ 4,000.00
60223800	MANHOLES, TYPE A, 6"-DIAMETER	EACH	1	\$ 5,000.00	\$ 5,000.00
60224446	MANHOLES, TYPE A, 7"-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	3	\$ 7,000.00	\$ 21,000.00
60603800	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12	FOOT	967	\$ 23.00	\$ 22,241.00
	TRIFLEX CHECK VALVE, 24"	EACH	2	\$ 15,000.00	\$ 30,000.00
<b>BASIN EXCAVATION</b>					
20200100	EARTH EXCAVATION	CU YD	15133	\$ 40.00	\$ 605,320.00
21101625	TOPSOIL FURNISH AND PLACE, 6"	SQ YD	8537	\$ 12.00	\$ 102,440.00
20013797	STABILIZED CONSTRUCTION ENTRANCE	SQ YD	100	\$ 30.00	\$ 3,000.00
<b>RESTORATION</b>					
25000100	SEEDING, CLASS 1	ACRE	1.1	\$ 1,000.00	\$ 1,100.00
25000312	SEEDING, CLASS 4A	ACRE	0.7	\$ 4,200.00	\$ 2,940.00
25100630	EROSION CONTROL BLANKET	SQ YD	5336	\$ 1.40	\$ 7,470.00
25200100	SOD INSTALLATION	SQ YD	164	\$ 12.00	\$ 1,968.00
42400300	PORTLAND CEMENT CONCRETE SIDEWALK 6 INCH	SQ FT	220	\$ 10.00	\$ 2,200.00
	ROADWAY BASE, 10" CA-6	SQ YD	226	\$ 8.00	\$ 1,808.00
	ROADWAY PAVEMENT	SQ YD	226	\$ 95.00	\$ 21,470.00
	NATIVE PLANTINGS, 3000 PLUGS PER ACRE	EACH	1984	\$ 4.25	\$ 8,432.00
	RESIDENTIAL DRIVEWAY R&R COMPLETE	SQ YD	146	\$ 60.00	\$ 8,760.00
	Maintenance & Monitoring	YEAR	3	\$ 5,000.00	\$ 15,000.00
	PARKWAY TREE INSTALLATION	EACH	7	\$ 650.00	\$ 4,550.00
CONSTRUCTION SUBTOTAL					
\$ 1,377,527.44					

STRUCTION SUBTOTAL \$ 1,377,527.40

CONTINGENCY (20%) \$ 275,505.00  
 DESIGN ENGINEERING & PERMITTING (8%) \$ 110,202.00

**CONSTRUCTION TOTAL \$ 1,873,436.41**

## PROPERTY ACQUISITION

PROPERTY ACQUISITION - (514 Kipling Ct)	EACH	1	\$ 258,000.00	\$ 258,000.00
PROPERTY ACQUISITION - (518 Kipling Ct)	EACH	1	\$ 244,000.00	\$ 244,000.00
PROPERTY ACQUISITION - (519 Kipling Ct)	EACH	1	\$ 204,000.00	\$ 204,000.00
PROPERTY ACQUISITION - (522 Kipling Ct)	EACH	1	\$ 264,000.00	\$ 264,000.00
PROPERTY ACQUISITION - (523 Kipling Ct)	EACH	1	\$ 228,000.00	\$ 228,000.00
PROPERTY ACQUISITION - (528 Kipling Ct)	EACH	1	\$ 287,000.00	\$ 287,000.00
PROPERTY ACQUISITION - (529 Kipling Ct)	EACH	1	\$ 399,000.00	\$ 399,000.00
PROPERTY ACQUISITION - (402 S Blanchard St)	EACH	1	\$ 229,000.00	\$ 229,000.00
PROPERTY ACQUISITION - (406 S Blanchard St)	EACH	1	\$ 211,000.00	\$ 211,000.00
PROPERTY ACQUISITION - (407 S Blanchard St)	EACH	1	\$ 510,000.00	\$ 510,000.00
PROPERTY ACQUISITION - (1015 E Evergreen St)	EACH	1	\$ 283,000.00	\$ 283,000.00
PROPERTY ACQUISITION - (1103 E Evergreen St)	EACH	1	\$ 212,000.00	\$ 212,000.00
PROPERTY ACQUISITION - (1402 E Illinois St)	EACH	1	\$ 298,000.00	\$ 298,000.00
DEMOLITION	EACH	13	\$ 12,000.00	\$ 156,000.00
ABATEMENT	EACH	13	\$ 20,000.00	\$ 260,000.00
LEGAL FEES	EACH	13	\$ 7,500.00	\$ 97,500.00

ACQUISITION TOTAL \$ 4,140,500.00

- 1) This is a conceptual estimate. Actual quantities and scope for the project will be determined during final engineering design.
- 2) The concept estimate does not include costs for ROW acquisition or temporary easements.

The following is specifically excluded from this patient:

Excluded from this estimate:

- 1) Bonds, permits, special insurance (waiver of subrogation, pollution liability insurance), and testing including QC/QA.
- 2) The demolition or handling of any petroleum contaminated soil, gas tanks, gas pumps etc.
- 3) Removal of buried or above ground petroleum underground storage tanks
- 4) Repair or restoration of asphalt roadways or paths that may need to be crossed with truck traffic for access to loading point.
- 5) The handling or disposal of hazardous materials or non-hazardous special waste material.
- 6) Compaction or Material Testing.
- 7) Winter Conditions or Lime Stabilization of Subgrades unless noted otherwise.
- 8) Dry Utility Relocates

Client: Joe Tebrugge  
 City of Wheaton  
 303 West Wesley Street  
 Wheaton, Illinois 60187  
 Phone: 630-848-5010  
 Email: [jtebrugge@wheaton.il.us](mailto:jtebrugge@wheaton.il.us)

Job Name: Flood Study  
 Williston Basin  
 Date of Plans: N/A  
 Revision Date: N/A  
 Project #: 12045.01  
 Date: 10/8/2018

**ALTERNATIVE 4**  
 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
<b>GENERAL CONDITIONS</b>					
67100100	MOBILIZATION (10%)	L SUM	1	—	\$ 123,000.00
	UNDERCUTTING & BACKFILL FOR UTILITIES (10% AT 3.0')	CY	65	\$ 90.00	\$ 5,850.00
	MAINTENANCE OF TRAFFIC	L SUM	1	\$ 20,000.00	\$ 20,000.00
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	EACH	7	\$ 50.00	\$ 350.00
20101200	TREE ROOT PRUNING	L SUM	1	\$ 1,500.00	\$ 1,500.00
44000100	PAVEMENT REMOVAL	SQ YD	226	\$ 17.00	\$ 3,842.00
44000500	COMBINATION CURB AND GUTTER REMOVAL	FOOT	967	\$ 6.00	\$ 5,802.00
44000600	SIDEWALK REMOVAL	SQ FT	220	\$ 4.00	\$ 880.00
<b>SEWER INSTALLATION</b>					
	STORM SEWERS, 12"	FOOT	181	\$ 110.00	\$ 19,910.00
	STORM SEWERS, 24"	FOOT	928	\$ 130.00	\$ 120,640.00
	SPOIL REMOVAL	CU YD	1536	\$ 45.00	\$ 69,120.00
20800150	TRENCH BACKFILL	CU YD	1536	\$ 50.00	\$ 76,800.00
54213657	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 12"	EACH	3	\$ 1,500.00	\$ 4,500.00
54213669	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 24"	EACH	2	\$ 2,000.00	\$ 4,000.00
55100400	STORM SEWER REMOVAL 10"	FOOT	314	\$ 20.00	\$ 6,288.00
55100700	STORM SEWER REMOVAL 15"	FOOT	338	\$ 25.00	\$ 8,450.00
60200105	CATCH BASINS, TYPE A, 4"-DIAMETER, TYPE 1 FRAME, OPEN LID	EACH	7	\$ 3,000.00	\$ 21,000.00
	CATCH BASINS, TYPE A, 7"-DIAMETER, TYPE 1 FRAME, OPEN LID	EACH	1	\$ 7,000.00	\$ 7,000.00
60218400	MANHOLES, TYPE A, 4"-DIAMETER	EACH	3	\$ 3,300.00	\$ 9,900.00
60221100	MANHOLES, TYPE A, 5"-DIAMETER	EACH	1	\$ 4,000.00	\$ 4,000.00
60223800	MANHOLES, TYPE A, 6"-DIAMETER	EACH	1	\$ 5,000.00	\$ 5,000.00
60224446	MANHOLES, TYPE A, 7"-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	3	\$ 7,000.00	\$ 21,000.00
60603800	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6-12	FOOT	967	\$ 23.00	\$ 22,241.00
	TIDEFLEX CHECK VALVE, 24"	EACH	2	\$ 15,000.00	\$ 30,000.00
<b>BASIN EXCAVATION</b>					
20200100	EARTH EXCAVATION	CU YD	15133	\$ 40.00	\$ 605,320.00
21101625	TOPSOIL FURNISH AND PLACE, 6"	SQ YD	8537	\$ 12.00	\$ 102,440.00
20013797	STABILIZED CONSTRUCTION ENTRANCE	SQ YD	100	\$ 30.00	\$ 3,000.00
<b>RESTORATION</b>					
25000100	SEEDING, CLASS 1	ACRE	1.1	\$ 1,000.00	\$ 1,100.00
25000312	SEEDING, CLASS 4A	ACRE	0.7	\$ 4,200.00	\$ 2,940.00
25100630	EROSION CONTROL BLANKET	SQ YD	5336	\$ 1.40	\$ 7,470.40
25200100	SOD INSTALLATION	SQ YD	164	\$ 12.00	\$ 1,968.00
42400300	PORTLAND CEMENT CONCRETE SIDEWALK 6 INCH	SQ FT	220	\$ 10.00	\$ 2,200.00
	ROADWAY BASE, 10" CA-6	SQ YD	226	\$ 8.00	\$ 1,808.00
	ROADWAY PAVEMENT	SQ YD	226	\$ 95.00	\$ 21,470.00
	NATIVE PLANTINGS, 3000 PLUGS PER ACRE	EACH	1984	\$ 4.25	\$ 8,432.00
	RESIDENTIAL DRIVEWAY R&R COMPLETE	SQ YD	146	\$ 60.00	\$ 8,760.00
	MAINTENANCE & MONITORING	YEAR	3	\$ 5,000.00	\$ 15,000.00
	PARKWAY TREE INSTALLATION	EACH	7	\$ 650.00	\$ 4,550.00
CONSTRUCTION SUBTOTAL					
CONTINGENCY (20%)					
DESIGN ENGINEERING & PERMITTING (8%)					
CONSTRUCTION ENGINEERING (8%)					
CONSTRUCTION TOTAL					
1,377,527.40					
<b>PROPERTY ACQUISITION</b>					
	PROPERTY ACQUISITION - (514 Kipling Ct)	EACH	1	\$ 258,000.00	\$ 258,000.00
	PROPERTY ACQUISITION - (518 Kipling Ct)	EACH	1	\$ 244,000.00	\$ 244,000.00
	PROPERTY ACQUISITION - (519 Kipling Ct)	EACH	1	\$ 204,000.00	\$ 204,000.00
	PROPERTY ACQUISITION - (522 Kipling Ct)	EACH	1	\$ 264,000.00	\$ 264,000.00
	PROPERTY ACQUISITION - (523 Kipling Ct)	EACH	1	\$ 228,000.00	\$ 228,000.00
	PROPERTY ACQUISITION - (528 Kipling Ct)	EACH	1	\$ 287,000.00	\$ 287,000.00
	PROPERTY ACQUISITION - (529 Kipling Ct)	EACH	1	\$ 399,000.00	\$ 399,000.00
	PROPERTY ACQUISITION - (402 S Blanchard St)	EACH	1	\$ 229,000.00	\$ 229,000.00
	PROPERTY ACQUISITION - (406 S Blanchard St)	EACH	1	\$ 211,000.00	\$ 211,000.00
	PROPERTY ACQUISITION - (407 S Blanchard St)	EACH	1	\$ 510,000.00	\$ 510,000.00
	PROPERTY ACQUISITION - (1015 E Evergreen St)	EACH	1	\$ 283,000.00	\$ 283,000.00
	PROPERTY ACQUISITION - (1103 E Evergreen St)	EACH	1	\$ 212,000.00	\$ 212,000.00
	PROPERTY ACQUISITION - (1402 E Illinois St)	EACH	1	\$ 298,000.00	\$ 298,000.00
	DEMOLITION	EACH	13	\$ 12,000.00	\$ 156,000.00
	ABATEMENT	EACH	13	\$ 20,000.00	\$ 260,000.00
	LEGAL FEES	EACH	13	\$ 7,500.00	\$ 97,500.00
PROPERTY ACQUISITION TOTAL					
4,140,500.00					
<b>GRAND TOTAL</b>					
<b>6,013,936.40</b>					

Notes:

1) This is a conceptual estimate. Actual quantities and scope for the project will be determined during final engineering design.  
 2) The concept estimate does not include costs for ROW acquisition or temporary easements.

The following is specifically excluded from this estimate:

- 1) Bonds, permits, special insurance (waiver of subrogation, pollution liability insurance), and testing including QC/QA.
- 2) The demolition or handling of any petroleum contaminated soil, gas tanks, gas pumps etc.
- 3) Removal of buried or above ground petroleum underground storage tanks.
- 4) Repair or restoration of asphalt roadways or paths that may need to be crossed with truck traffic for access to loading point.
- 5) The handling or disposal of hazardous materials or non-hazardous special waste material.
- 6) Compaction or Material Testing.
- 7) Winter Conditions or Lime Stabilization of Subgrades unless noted otherwise.
- 8) Dry Utility Relocates

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 City of Wheaton  
 303 West Wesley Street  
 Wheaton, Illinois 60187  
 Phone: 630-848-5010  
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Job Name: Flood Study  
 Williston Basin  
 Date of Plans: N/A  
 Revision Date: N/A  
 Project #: 12045.01  
 Date: 10/8/2018

**ALTERNATIVE 5**  
 ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
<b>GENERAL CONDITIONS</b>					
67100100	MOBILIZATION (10%)	L'SUM	1	\$ 334,000.00	
	UNDERCUTTING & BACKFILL FOR UTILITIES (10% AT 3.0')	CY	338	\$ 90.00	\$ 30,210.00
	MAINTENANCE OF TRAFFIC	L'SUM	1	\$ 100,000.00	\$ 100,000.00
20100110	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	EACH	31	\$ 50.00	\$ 1,550.00
20101200	TREE ROOT PRUNING	L'SUM	1	\$ 1,500.00	\$ 1,500.00
44000100	PAVEMENT REMOVAL	SQ YD	2360	\$ 17.00	\$ 40,120.00
44000500	COMBINATION CURB AND GUTTER REMOVAL	FOOT	3733	\$ 6.00	\$ 22,398.00
44000600	SIDEWALK REMOVAL	SQ FT	1805	\$ 4.00	\$ 7,220.00
<b>SEWER INSTALLATION</b>					
	STORM SEWERS, 12"	FOOT	181	\$ 110.00	\$ 19,910.00
	STORM SEWERS, 18"	FOOT	283	\$ 120.00	\$ 33,560.00
	STORM SEWERS, 24"	FOOT	645	\$ 130.00	\$ 83,850.00
	STORM SEWERS, 48"	FOOT	2925	\$ 175.00	\$ 511,940.00
	STORM SEWERS, 60"	FOOT	334	\$ 225.00	\$ 75,150.00
	SPOIL REMOVAL	CY/YD	9659	\$ 45.00	\$ 434,655.00
20800150	TRENCH BACKFILL	CY/YD	9659	\$ 50.00	\$ 482,950.00
54213657	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 12"	EACH	3	\$ 1,500.00	\$ 4,500.00
54213669	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 24"	EACH	2	\$ 2,000.00	\$ 4,000.00
55100400	STORM SEWER REMOVAL 10"	FOOT	314	\$ 20.00	\$ 6,284.00
55100700	STORM SEWER REMOVAL 15"	FOOT	338	\$ 25.00	\$ 8,450.00
55101600	STORM SEWER REMOVAL 30"	FOOT	1732	\$ 50.00	\$ 86,599.00
55101900	STORM SEWER REMOVAL 48"	FOOT	334	\$ 60.00	\$ 20,019.00
60200105	CATCH BASINS, TYPE A, 6"-DIAMETER, TYPE 1 FRAME, OPEN UD	EACH	8	\$ 2,000.00	\$ 16,000.00
	CATCH BASINS, TYPE A, 6"-DIAMETER, TYPE 1 FRAME, OPEN UD	EACH	1	\$ 25.00	\$ 25.00
	CATCH BASINS, TYPE A, 8"-DIAMETER, TYPE 1 FRAME, OPEN UD	EACH	1	\$ 60.00	\$ 60.00
60218400	MANHOLES, TYPE A, 4"-DIAMETER, TYPE 1 FRAME, CLOSED UD	EACH	1	\$ 3,300.00	\$ 3,300.00
60221100	MANHOLES, TYPE A, 5"-DIAMETER, TYPE 1 FRAME, CLOSED UD	EACH	2	\$ 4,000.00	\$ 8,000.00
60223800	MANHOLES, TYPE A, 6"-DIAMETER, TYPE 1 FRAME, CLOSED UD	EACH	3	\$ 5,000.00	\$ 15,000.00
60224446	MANHOLES, TYPE A, 7"-DIAMETER, TYPE 1 FRAME, CLOSED UD	EACH	2	\$ 7,000.00	\$ 14,000.00
60224459	MANHOLES, TYPE A, 8"-DIAMETER, TYPE 1 FRAME, CLOSED UD	EACH	2	\$ 15,000.00	\$ 30,000.00
60603800	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6-12	FOOT	3733	\$ 23.00	\$ 85,859.00
	TIDEFLEX CHECK VALVE, 24"	EACH	2	\$ 15,000.00	\$ 30,000.00
<b>BASIN EXCAVATION</b>					
20200100	EARTH EXCAVATION	CY/YD	15133	\$ 40.00	\$ 605,320.00
21101625	TOPSOIL FURNISH AND PLACE, 6"	SQ YD	8537	\$ 12.00	\$ 102,440.00
20013797	STABILIZED CONSTRUCTION ENTRANCE	SQ YD	100	\$ 30.00	\$ 3,000.00
<b>RESTORATION</b>					
25000100	SEEDING, CLASS 1	ACRE	1.1	\$ 1,000.00	\$ 1,100.00
25000312	SEEDING, CLASS 4A	ACRE	0.7	\$ 4,200.00	\$ 2,940.00
25100630	EROSION CONTROL BLANKET	SQ YD	5336	\$ 1.40	\$ 7,470.40
25200100	SOD INSTALLATION	SQ YD	684	\$ 12.00	\$ 8,208.00
42400300	PORTLAND CEMENT CONCRETE SIDEWALK 6 INCH	SQ FT	1805	\$ 10.00	\$ 18,050.00
	ROADWAY BASE, 10" CA-6	SQ YD	2360	\$ 8.00	\$ 18,880.00
	ROADWAY PAVEMENT	SQ YD	2360	\$ 95.00	\$ 224,200.00
	NATIVE PLANTINGS, 2000 PLUGS PER ACRE	EACH	1984	\$ 4.25	\$ 8,432.00
	RESIDENTIAL DRIVEWAY R&R COMPLETE	SQ YD	516	\$ 60.00	\$ 30,960.00
	MAINTENANCE & MONITORING	YEAR	3	\$ 5,000.00	\$ 15,000.00
	PARKWAY TREE INSTALLATION	EACH	31	\$ 650.00	\$ 20,150.00
CONSTRUCTION SUBTOTAL					
\$ 3,567,169.40					
CONTINGENCY (20%)					
\$ 713,554.00					
DESIGN ENGINEERING & PERMITTING (8%)					
\$ 285,422.00					
CONSTRUCTION ENGINEERING (8%)					
\$ 285,422.00					
CONSTRUCTION TOTAL					
\$ 4,852,167.40					
<b>PROPERTY ACQUISITION</b>					
	PROPERTY ACQUISITION - (514 Kipling Ct)	EACH	1	\$ 258,000.00	\$ 258,000.00
	PROPERTY ACQUISITION - (518 Kipling Ct)	EACH	1	\$ 244,000.00	\$ 244,000.00
	PROPERTY ACQUISITION - (519 Kipling Ct)	EACH	1	\$ 204,000.00	\$ 204,000.00
	PROPERTY ACQUISITION - (522 Kipling Ct)	EACH	1	\$ 264,000.00	\$ 264,000.00
	PROPERTY ACQUISITION - (523 Kipling Ct)	EACH	1	\$ 228,000.00	\$ 228,000.00
	PROPERTY ACQUISITION - (528 Kipling Ct)	EACH	1	\$ 287,000.00	\$ 287,000.00
	PROPERTY ACQUISITION - (529 Kipling Ct)	EACH	1	\$ 399,000.00	\$ 399,000.00
	PROPERTY ACQUISITION - (402 S Blanchard St)	EACH	1	\$ 229,000.00	\$ 229,000.00
	PROPERTY ACQUISITION - (406 S Blanchard St)	EACH	1	\$ 211,000.00	\$ 211,000.00
	PROPERTY ACQUISITION - (407 S Blanchard St)	EACH	1	\$ 510,000.00	\$ 510,000.00
	PROPERTY ACQUISITION - (1015 E Evergreen St)	EACH	1	\$ 283,000.00	\$ 283,000.00
	PROPERTY ACQUISITION - (1103 E Evergreen St)	EACH	1	\$ 212,000.00	\$ 212,000.00
	PROPERTY ACQUISITION - (1402 E Illinois St)	EACH	1	\$ 298,000.00	\$ 298,000.00
	DEMOLITION	EACH	13	\$ 12,000.00	\$ 156,000.00
	ABATEMENT	EACH	13	\$ 20,000.00	\$ 260,000.00
	LEGAL FEES	EACH	13	\$ 7,500.00	\$ 97,500.00
PROPERTY ACQUISITION SUBTOTAL					
\$ 4,140,500.00					
<b>GRAND TOTAL</b>					
<b>\$ 8,992,667.40</b>					
Notes:					
1) This is a conceptual estimate. Actual quantities and scope for the project will be determined during final engineering design.					
2) The concept estimate does not include costs for ROW acquisition or temporary easements.					
The Following is specifically excluded from this estimate:					
1) Bonds, permits, special insurance (waiver of subrogation, pollution liability insurance), and testing including QC/QA.					
2) The demolition or handling of any petroleum contaminated soil, gas tanks, gas pumps etc.					
3) Removal of buried or above ground petroleum underground storage tanks					
4) Repair or restoration of asphalt roadways or paths that may need to be crossed with truck traffic for access to loading point.					
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6) Compaction or Material Testing					
7) Winter Conditions or Lime Stabilization of Subgrades unless noted otherwise.					
8) Dry Utility Relocates					

Client: Joe Tebrugge  
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 Wheaton, Illinois 60187  
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Job Name: Flood Study  
 Williston Basin  
 Date of Plans: N/A  
 Revision Date: N/A  
 Project #: 12045.01  
 Date: 10/8/2018

#### ALTERNATIVE 6

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
<b>BASIN EXCAVATION</b>					
PROPERTY ACQUISITION - (514 Kipling Ct)	EACH	1	\$ 258,000.00	\$ 258,000.00	
PROPERTY ACQUISITION - (518 Kipling Ct)	EACH	1	\$ 244,000.00	\$ 244,000.00	
PROPERTY ACQUISITION - (519 Kipling Ct)	EACH	1	\$ 204,000.00	\$ 204,000.00	
PROPERTY ACQUISITION - (522 Kipling Ct)	EACH	1	\$ 264,000.00	\$ 264,000.00	
PROPERTY ACQUISITION - (523 Kipling Ct)	EACH	1	\$ 228,000.00	\$ 228,000.00	
PROPERTY ACQUISITION - (528 Kipling Ct)	EACH	1	\$ 287,000.00	\$ 287,000.00	
PROPERTY ACQUISITION - (529 Kipling Ct)	EACH	1	\$ 399,000.00	\$ 399,000.00	
PROPERTY ACQUISITION - (402 S Blanchard St)	EACH	1	\$ 229,000.00	\$ 229,000.00	
PROPERTY ACQUISITION - (406 S Blanchard St)	EACH	1	\$ 211,000.00	\$ 211,000.00	
PROPERTY ACQUISITION - (407 S Blanchard St)	EACH	1	\$ 510,000.00	\$ 510,000.00	
PROPERTY ACQUISITION - (1015 E Evergreen St)	EACH	1	\$ 283,000.00	\$ 283,000.00	
PROPERTY ACQUISITION - (1103 E Evergreen St)	EACH	1	\$ 212,000.00	\$ 212,000.00	
PROPERTY ACQUISITION - (1402 E Illinois St)	EACH	1	\$ 298,000.00	\$ 298,000.00	
PROPERTY ACQUISITION - (510 Kipling Ct)	EACH	1	\$ 263,000.00	\$ 263,000.00	
PROPERTY ACQUISITION - (511 Kipling Ct)	EACH	1	\$ 291,000.00	\$ 291,000.00	
PROPERTY ACQUISITION - (804 E Indiana St)	EACH	1	\$ 327,000.00	\$ 327,000.00	
PROPERTY ACQUISITION - (710 E Evergreen St)	EACH	1	\$ 218,000.00	\$ 218,000.00	
PROPERTY ACQUISITION - (507 S President St)	EACH	1	\$ 176,000.00	\$ 176,000.00	
PROPERTY ACQUISITION - (511 S President St)	EACH	1	\$ 175,000.00	\$ 175,000.00	
PROPERTY ACQUISITION - (515 S President St)	EACH	1	\$ 176,000.00	\$ 176,000.00	
PROPERTY ACQUISITION - (419 S Williston St)	EACH	1	\$ 299,000.00	\$ 299,000.00	
PROPERTY ACQUISITION - (423 S Williston St)	EACH	1	\$ 244,000.00	\$ 244,000.00	
PROPERTY ACQUISITION - (503 S Williston St)	EACH	1	\$ 223,000.00	\$ 223,000.00	
PROPERTY ACQUISITION - (506 S Williston St)	EACH	1	\$ 251,000.00	\$ 251,000.00	
PROPERTY ACQUISITION - (507 S Williston St)	EACH	1	\$ 233,000.00	\$ 233,000.00	
PROPERTY ACQUISITION - (511 S Williston St)	EACH	1	\$ 277,000.00	\$ 277,000.00	
PROPERTY ACQUISITION - (515 S Williston St)	EACH	1	\$ 213,000.00	\$ 213,000.00	
PROPERTY ACQUISITION - (518 S Williston St)	EACH	1	\$ 214,000.00	\$ 214,000.00	
PROPERTY ACQUISITION - (519 S Williston St)	EACH	1	\$ 244,000.00	\$ 244,000.00	
PROPERTY ACQUISITION - (528 S Williston St)	EACH	1	\$ 242,000.00	\$ 242,000.00	
PROPERTY ACQUISITION - (322 S Blanchard St)	EACH	1	\$ 293,000.00	\$ 293,000.00	
PROPERTY ACQUISITION - (413 S Blanchard St)	EACH	1	\$ 368,000.00	\$ 368,000.00	
PROPERTY ACQUISITION - (402 S Summit St)	EACH	1	\$ 685,000.00	\$ 685,000.00	
PROPERTY ACQUISITION - (408 S Summit St)	EACH	1	\$ 294,000.00	\$ 294,000.00	
PROPERTY ACQUISITION - (412 S Summit St)	EACH	1	\$ 313,000.00	\$ 313,000.00	
PROPERTY ACQUISITION - (1403 E Illinois St)	EACH	1	\$ 250,000.00	\$ 250,000.00	
<b>DEMOLITION</b>	EACH	36	\$ 12,000.00	\$ 432,000.00	
<b>ABATEMENT</b>	EACH	36	\$ 20,000.00	\$ 720,000.00	
<b>LEGAL FEES</b>	EACH	36	\$ 7,500.00	\$ 270,000.00	
<b>PROPERTY ACQUISITION TOTAL</b>					<b>\$ 11,318,000.00</b>

Notes:

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- 2) The concept estimate does not include costs for ROW acquisition or temporary easements.

The Following is specifically excluded from this estimate:

- 1) Bonds, permits, special insurance (waiver of subrogation, pollution liability insurance), and testing including QC/QA.
- 2) The demolition or handling of any petroleum contaminated soil, gas tanks, gas pumps etc.
- 3) Removal of buried or above ground petroleum underground storage tanks
- 4) Repair or restoration of asphalt roadways or paths that may need to be crossed with truck traffic for access to loading point.
- 5) The handling or disposal of hazardous materials or non-hazardous special waste material.
- 6) Compaction or Material Testing.
- 7) Winter Conditions or Lime Stabilization of Subgrades unless noted otherwise.
- 8) Dry Utility Relocates

Address	Top of Foundation Elevation (or FF if TF not available)	Low Entry Elevation (max of LPE and adjacent ground)	Existing Depth of Water Above Top of Foundation Elevation	Existing Depth of Water Above Low Entry Elevation	Location of Low Entry	Potential Floodproofing Remedy	Cost to Floodproof Foundation	Cost to Floodproof LPE	Total Structure Cost
710 Evergreen St	774.22	772.56	--	0.29	Window Sill	Raised Window Wells	\$0	\$2,000	\$2,000
723 Evergreen St	775.39	773.4	--	--	Window Sill		\$0	\$0	\$0
723 Evergreen St	775.39	773.66	--	--	Window Well		\$0	\$0	
727 Evergreen St	775.36	773.39	--	--	Window Sill		\$0	\$0	\$0
714 E Indiana St	777.28	773.77	--	--	Window Sill		\$0	\$0	\$0
722 E Indiana St	774.26	771.41	--	--	Window Sill		\$0	\$0	\$0
722 E Indiana St	774.26	771.12	--	--	Window Sill		\$0	\$0	
726 E Indiana St	774.23	771.47	--	--	Window Sill		\$0	\$0	\$0
804 E Indiana St	769.08	772.34	0.70	--	Window Well Rim		\$100,000	\$0	\$100,000
812 E Indiana St	778.43	775.73	--	--	Window Sill		\$0	\$0	\$0
812 E Indiana St	778.43	775.74	--	--	Window Sill		\$0	\$0	
818 E Indiana St	777.06	777.06	--	--	Basement Stairwell		\$0	\$0	\$0
829 Indiana St	773.49	772	0.85	2.34	Window Sill	Raised Window Wells	\$100,000		\$100,000
808 Illinois St	773.8	773.8	0.54	0.54	N/A	-	\$100,000		\$100,000
814 Illinois St	776.56	773.8	--	0.54	Window Well Rim	Raised Window Wells	\$0	\$2,000	\$2,000
820 Illinois St	778.01	775.22	--	--	Window Well Rim		\$0	\$0	\$0
815 Indiana St	774.04	774.04	0.30	0.30	N/A	-	\$100,000		\$100,000
819 Indiana St	775.12	773.14	--	1.20	Window Sill	Raised Window Wells	\$0	\$2,000	
819 Indiana St	775.12	772.78	--	1.56	Window Sill	Raised Window Wells	\$0	\$2,000	
819 Indiana St	775.12	772.63	--	1.71	Window Sill	Raised Window Wells	\$0	\$2,000	\$10,000
819 Indiana St	775.12	772.54	--	1.80	Window Sill	Raised Window Wells	\$0	\$2,000	
819 Indiana St	775.12	772.53	--	1.81	Window Sill	Raised Window Wells	\$0	\$2,000	
825 Indiana St	773.16	772.56	1.18	1.78	Window Sill	Raised Window Wells	\$100,000		
825 Indiana St	773.16	772.57	1.18	1.77	Window Sill	Raised Window Wells	\$100,000		\$100,000
825 Indiana St	773.16	772.69	1.18	1.65	Window Sill	Raised Window Wells	\$100,000		
507 S President St	767.26	764	--	0.28	Window Sill	Raised Window Wells	\$0	\$2,000	\$2,000
511 S President St	767.89	764.02	--	0.26	Window Sill	Raised Window Wells	\$0	\$2,000	
511 S President St	767.89	763.71	--	0.57	Window Sill	Raised Window Wells	\$0	\$2,000	\$4,000
515 S President St	768.45	763.97	--	0.31	Window Sill	Raised Window Wells	\$0	\$2,000	
515 S President St	768.45	763.96	--	0.32	Window Sill	Raised Window Wells	\$0	\$2,000	
515 S President St	768.45	764.17	--	0.11	Window Sill	Raised Window Wells	\$0	\$2,000	\$8,000
515 S President St	768.45	764.11	--	0.17	Window Sill	Raised Window Wells	\$0	\$2,000	
503 S President St	764.87	764.62	--	--	FFL Downstairs		\$0		\$0
529 S President St	762.72	762.69	--	--	Slider		\$0		\$0
926 E Indiana St	764.61	767.37	--	--	N/A		\$0		\$0
510 S President St	766.25	766.25	--	--	N/A		\$0		\$0
517 S President St	764.84	763.73	--	--	Door		\$0		\$0
521 S President St	766.5	766.5	--	--	N/A		\$0		\$0
511 Kipling Ct	760.74	759.71	--	0.80	Door	Removable Flood Shield (for door)	\$0	\$3,000	
511 Kipling Ct	760.74	761.45	--	--	Window Sill		\$0	\$0	\$3,000
519 Kipling Ct	759.13	758.46	1.38	2.05	Window Sill	Raised Window Wells	\$100,000		
519 Kipling Ct	759.13	759.19	1.38	1.32	Window Sill	Raised Window Wells	\$100,000		
519 Kipling Ct	759.13	759.38	1.38	1.13	Window Sill	Raised Window Wells	\$100,000		
523 Kipling Ct	763.09	760.03	--	0.48	Window Sill	Raised Window Wells	\$0	\$2,000	\$4,000
523 Kipling Ct	763.09	759.79	--	0.72	Window Sill	Raised Window Wells	\$0	\$2,000	
529 Kipling Ct	761.03	758.85	--	1.66	Window Sill	Raised Window Wells	\$0	\$2,000	
529 Kipling Ct	761.03	758.06	--	2.45	Window Sill	Raised Window Wells	\$0	\$2,000	\$4,000
1103 Evergreen St	761.3	757.97	--	2.54	Window Sill	Raised Window Wells	\$0	\$2,000	
1103 Evergreen St	761.3	758.04	--	2.47	Window Sill	Raised Window Wells	\$0	\$2,000	\$4,000
510 Kipling Ct	761.1	759.76	--	0.75	Door	Removable Flood Shield (for door)	\$0	\$3,000	\$3,000

Address	Top of Foundation Elevation (or FF if TF not available)	Low Entry Elevation (max of LPE and adjacent ground)	Existing Depth of Water Above Top of Foundation Elevation	Existing Depth of Water Above Low Entry Elevation	Location of Low Entry	Potential Floodproofing Remedy	Cost to Floodproof Foundation	Cost to Floodproof LPE	Total Structure Cost
514 Kipling Ct	760.28	758.76	0.23	1.75	Window Sill	Raised Window Wells	\$100,000		\$100,000
514 Kipling Ct	760.28	758.82	0.23	1.69	Window Sill	Raised Window Wells	\$100,000		
514 Kipling Ct	760.28	758.17	0.23	2.34	Window Sill	Raised Window Wells	\$100,000		
518 Kipling Ct	759.39	758.39	1.12	2.12	Window Sill	Raised Window Wells	\$100,000		\$100,000
518 Kipling Ct	759.39	758.25	1.12	2.26	Window Sill	Raised Window Wells	\$100,000		
518 Kipling Ct	759.39	758.16	1.12	2.35	Window Sill	Raised Window Wells	\$100,000		
518 Kipling Ct	759.39	757.95	1.12	2.56	Window Sill	Raised Window Wells	\$100,000		
522 Kipling Ct	759.12	757.77	1.39	2.74	Window Sill	Raised Window Wells	\$100,000		\$100,000
522 Kipling Ct	759.12	757.55	1.39	2.96	Window Sill	Raised Window Wells	\$100,000		
522 Kipling Ct	759.12	757.62	1.39	2.89	Window Sill	Raised Window Wells	\$100,000		
528 Kipling Ct	758.79	757.5	1.39	3.01	Window Sill	Raised Window Wells	\$100,000		
528 Kipling Ct	758.79	757.08	1.72	3.43	Window Sill	Raised Window Wells	\$100,000		
528 Kipling Ct	758.79	756.93	1.72	3.58	Window Sill	Raised Window Wells	\$100,000		\$100,000
528 Kipling Ct	758.79	756.78	1.72	3.73	Window Sill	Raised Window Wells	\$100,000		
1015 Evergreen St	759.27	757.68	1.24	2.83	Window Sill	Raised Window Wells	\$100,000		
1015 Evergreen St	759.27	757.39	1.24	3.12	Window Sill	Raised Window Wells	\$100,000		\$100,000
1015 Evergreen St	759.27	756.65	1.24	3.86	Window Sill	Raised Window Wells	\$100,000		
1006 Evergreen St	N/A	762.3	--	--	Sill		\$0	\$0	\$0
1014 Evergreen St	760.83	760.83	--	--	--		\$0	\$0	\$0
1102 Evergreen St	761.02	761.02	--	--	T/F		\$0	\$0	\$0
1106 Evergreen St	761.6	761.81	--	--	Sill		\$0	\$0	\$0
1118 Evergreen St	765.07	761.78	--	--	Sill		\$0	\$0	\$0
415 Williston St	767.36	762.69	--	--	Door		\$0	\$0	\$0
419 Williston St	766.46	760.56	--	--	Door		\$0	\$0	\$0
423 Williston St	761.95	760.25	--	0.27	Door	Removable Flood Shield (for door)	\$0	\$3,000	\$3,000
506 Williston St	759.21	758.22	1.31	2.30	Window Sill	Raised Window Wells	\$100,000		\$100,000
518 Williston St	760.21	759.39	0.31	1.13	Window Well Rim	Raised Window Wells	\$100,000		\$100,000
528 Williston St	761.08	760.27	--	0.25	Window Well Rim	Raised Window Wells	\$0	\$2,000	
528 Williston St	761.08	759.12	--	1.40	Door	Removable Flood Shield (for door)	\$0	\$3,000	\$7,000
528 Williston St	761.08	760.19	--	0.33	Window Well Rim	Raised Window Wells	\$0	\$2,000	
503 Williston St	761.88	759.47	--	1.05	Window Sill	Raised Window Wells	\$0	\$2,000	
503 Williston St	761.88	759.46	--	1.06	Window Sill	Raised Window Wells	\$0	\$2,000	\$6,000
503 Williston St	761.88	759.49	--	1.03	Window Sill	Raised Window Wells	\$0	\$2,000	
507 Williston St	761.45	759.06	--	1.46	Window Sill	Raised Window Wells	\$0	\$2,000	
507 Williston St	761.45	759.06	--	1.46	--	Additional Drainage Improvements	\$0	\$100,000	\$100,000
507 Williston St	761.45	759.06	--	1.46	--	Additional Drainage Improvements	\$0	\$100,000	
511 Williston St	762.25	759.64	--	0.88	Window Sill	Raised Window Wells	\$0	\$2,000	\$2,000
515 Williston St	759.25	759.06	1.27	1.46	Window Sill	Raised Window Wells	\$100,000		\$100,000
519 Williston St	760.69	759.77	--	0.75	Window Sill	Raised Window Wells	\$0	\$2,000	\$2,000
523 Williston St	763.22	761.72	--	--	Window Sill		\$0	\$0	\$0
529 Williston St	763.25	762.15	--	--	Window Sill		\$0	\$0	\$0
1205 Evergreen St	762.9	761.8	--	--	Window Sill		\$0	\$0	\$0
410 Byron Ct	765.28	763.78	--	--	Window Sill		\$0	\$0	\$0
418 Byron Ct	764.97	762.18	--	0.60	Window Sill	Raised Window Wells	\$0	\$2,000	\$2,000
418 Byron Ct	764.97	762.22	--	0.56	Window Sill	Raised Window Wells	\$0	\$2,000	
418 Byron Ct	764.97	762.24	--	0.54	Window Sill	Raised Window Wells	\$0	\$2,000	
418 Byron Ct	764.97	762.21	--	0.57	Window Sill	Raised Window Wells	\$0	\$2,000	
418 Byron Ct	764.97	762.23	--	0.55	Window Sill	Raised Window Wells	\$0	\$2,000	
422 Byron Ct	765.53	762.23	--	--	Window Sill		\$0	\$0	\$0
407 Byron Ct	765.24	765.24	--	--	Window Well Rim		\$0	\$0	\$0

Address	Top of Foundation Elevation (or FF if TF not available)	Low Entry Elevation (max of LPE and adjacent ground)	Existing Depth of Water Above Top of Foundation Elevation	Existing Depth of Water Above Low Entry Elevation	Location of Low Entry	Potential Floodproofing Remedy	Cost to Floodproof Foundation	Cost to Floodproof LPE	Total Structure Cost
411 Byron Ct	765.78	765.19	--	--	Sill		\$0	\$0	\$0
415 Byron Ct	766.42	765.8	--	--	Sill		\$0	\$0	\$0
419 Byron Ct	766.1	767.37	--	--	--		\$0	\$0	\$0
423 Byron Ct	764.95	765.04	--	--	--		\$0	\$0	\$0
402 Blanchard St	764.04	762.4	--	1.25	Window Well Rim	Raised Window Wells	\$0	\$2,000	
402 Blanchard St	764.04	762.4	--	1.25	Window Well Rim	Raised Window Wells	\$0	\$2,000	
402 Blanchard St	764.04	762.04	--	1.61	Window Well Rim	Raised Window Wells	\$0	\$2,000	\$8,000
402 Blanchard St	764.04	762.64	--	1.01	Window Well Rim	Raised Window Wells	\$0	\$2,000	
406 Blanchard St	763.97	763.01	--	0.64	Window Well Rim	Raised Window Wells	\$0	\$2,000	\$2,000
410 Blanchard St	765.91	764.43	--	--	Window Well Rim		\$0	\$0	
410 Blanchard St	765.91	764.43	--	--	Window Well Rim		\$0	\$0	
410 Blanchard St	765.91	764.4	--	--	Window Well Rim		\$0	\$0	
410 Blanchard St	765.91	764.44	--	--	Window Well Rim		\$0	\$0	\$0
410 Blanchard St	765.91	764.42	--	--	Window Well Rim		\$0	\$0	
410 Blanchard St	765.91	764.41	--	--	Window Well Rim		\$0	\$0	
414 Blanchard St	766.21	765.12	--	--	Sill		\$0	\$0	\$0
1402 Illinois St	761.03	761.03	2.62	2.62	N/A	-	\$100,000		\$100,000
407 Blanchard St	762.95	762.1	0.70	1.55	Window Well Rim	Raised Window Wells	\$100,000		\$100,000
413 Blanchard St	765.26	763.93	--	--	Window Well Rim		\$0	\$0	
413 Blanchard St	765.26	763.93	--	--	Window Well Rim		\$0	\$0	
413 Blanchard St	765.26	763.93	--	--	Window Well Rim		\$0	\$0	
419 Blanchard St	766.37	765.77	--	--	Sill		\$0	\$0	\$0
402 Summit St	764.67	763.05	--	0.60	Window Well Rim	Raised Window Wells	\$0	\$2,000	
402 Summit St	764.67	762.92	--	0.73	Window Well Rim	Raised Window Wells	\$0	\$2,000	
402 Summit St	764.67	763.12	--	0.53	Window Well Rim	Raised Window Wells	\$0	\$2,000	
402 Summit St	764.67	763.11	--	0.54	Window Well Rim	Raised Window Wells	\$0	\$2,000	
402 Summit St	764.67	763.68	--	--	Door		\$0	\$0	
408 Summit St	766.46	763.77	--	--	Window Well Rim		\$0	\$0	
408 Summit St	766.46	763.73	--	--	Window Well Rim		\$0	\$0	
408 Summit St	766.46	763.74	--	--	Window Well Rim		\$0	\$0	
408 Summit St	766.46	763.59	--	0.06	Window Well Rim	Raised Window Wells	\$0	\$2,000	
408 Summit St	766.46	763.64	--	0.01	Window Well Rim	Raised Window Wells	\$0	\$2,000	
408 Summit St	766.46	763.72	--	--	Window Well Rim		\$0	\$0	
412 Summit St	765.83	763.33	--	0.32	Window Well Rim	Raised Window Wells	\$0	\$2,000	
412 Summit St	765.83	763.42	--	0.23	Window Well Rim	Raised Window Wells	\$0	\$2,000	
412 Summit St	765.83	763.46	--	0.19	Window Well Rim	Raised Window Wells	\$0	\$2,000	
412 Summit St	765.83	763.31	--	0.34	Window Well Rim	Raised Window Wells	\$0	\$2,000	
422 Summit St	767.45	766.85	--	--	Sill		\$0	\$0	\$0
1502 Illinois St	767.41	766.77	--	--	Sill		\$0	\$0	\$0
407 Summit St	766.3	765.8	--	--	Sill		\$0	\$0	\$0
413 Summit St	766.14	764.94	--	--	Sill		\$0	\$0	\$0
417 Summit St	765.16	765.68	--	--	Door		\$0	\$0	\$0
416 Summit St	763.93	763.40	--	0.25	Window Well Rim	Raised Window Wells	\$0	\$2,000	
416 Summit St	763.93	763.42	--	0.23	Window Well Rim	Raised Window Wells	\$0	\$2,000	
416 Summit St	763.93	763.39	--	0.26	Window Well Rim	Raised Window Wells	\$0	\$2,000	
416 Summit St	763.93	763.37	--	0.28	Window Well Rim	Raised Window Wells	\$0	\$2,000	
322 Blanchard St	763.93	763.31	--	0.34	Window Well Rim	Raised Window Wells	\$0	\$2,000	
322 Blanchard St	763.79	763.49	--	0.16	Window Well Rim	Raised Window Wells	\$0	\$2,000	\$4,000
305 Blanchard St	771.13	769.77	--	--	Sill		\$0	\$0	\$0
1315 Illinois St	767.6	765.6	--	--	Sill		\$0	\$0	\$0
1403 Illinois St	764.2	762.49	--	1.16	Window Well Rim	Raised Window Wells	\$0	\$2,000	\$2,000
1304 Illinois St	764.8	764.8	--	--	Finished Floor Elevation		\$0	\$0	\$0
322 Summit St	768.12	765.37	--	--	Window Well Rim		\$0	\$0	
322 Summit St	768.12	765.22	--	--	Window Well Rim		\$0	\$0	
322 Summit St	768.12	765.26	--	--	Window Well Rim		\$0	\$0	
322 Summit St	768.12	765.25	--	--	Window Well Rim		\$0	\$0	
322 Summit St	768.12	765.25	--	--	Window Well Rim		\$0	\$0	

APPENDIX 5  
FLOODPROOFING PROJECTS



## **Floodproofing Alternatives**

A variety of floodproofing alternatives exist to provide protection to homes with low entry elevations below the expected water surface elevations. These include grading modifications such as driveway berms or berms/walls around a home; wet floodproofing options such as flow-through vents and utility elevation; dry floodproofing measures such as raised window wells or flood shields at exterior openings; or structural elevation.

A full list of floodproofing options included in this appendix is as follows:

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## **GRADING**

Properties that do not have adequate grading can re-grade their yards. The ground around the perimeter of the building should slope away from the structure to prevent stormwater runoff from ponding against the foundation wall, where it can seep into the building. Some of the advantages and disadvantages to re-grading landscaped areas are as follows:

### ***Advantages***

- Very effective in areas with shallow flooding,
- Lower capital costs than other flood mitigation strategies.

### ***Disadvantages***

- Cooperation may be needed from adjacent property owners,
- Flood insurance premiums will not be reduced for properties located in the floodplain, and
- Areas within the regulatory floodplain are restricted in that they cannot place fill in those areas.

If re-grading a yard is found to be the best alternative to reduce structural flooding, the following points should be considered:

- An elevation change of at least 1 foot over 10 feet (1% slope) from the exterior wall of the home is needed to adequately direct water away from the structure,
- Lot grading should direct water to an acceptable drainage outlet, and
- Discharges of stormwater should not negatively impact neighboring properties.

Areas where water naturally flows toward the structure can benefit from re-grading the yard. If water flows toward the building, a new swale or wall can direct the flow to the street or drainage-way. Filling and grading next to the building can also direct shallow flooding to the yard. When these types of drainage modifications are made, care must be taken not to adversely affect the drainage patterns of adjacent properties.

Often, water flows to a low entry point, such as a basement window well or patio door. Regrading around the structure can reduce the occurrence of structural flooding. Some ways to improve the grading around the structure include:

- Driveway berms, and
- Barriers (berms/levees/floodwalls)

These alternatives are discussed in detail in the following paragraphs.

## **Driveway Berms**

Reverse sloped driveways are often used in high-density neighborhoods, where there is not sufficient area for external garages. This type of driveway, however, creates a significant flood risk as it can direct overland stormwater flows into homes. Water that enters homes through reverse sloped driveways can cause structural damage, and also contribute to sewer backups, if this water enters basement floor drains.

One solution is to construct a driveway berm, which ensures there is not a constant slope towards the structure from the street. This can be achieved by either raising the sidewalk and/or reconstructing the entire driveway. By raising the sidewalk, a high-point is created between the street and the point where the reverse-sloped driveway begins to slope down toward the structure. A portion of the driveway must be reconstructed to transition the grade of the driveway to the elevated sidewalk. This can reduce the chances that overland flooding will enter the structure through the reverse sloped driveway. Alternatively, the entire driveway can be reconstructed to provide a highpoint between the garage and the street, which will reduce the occurrence of surface water in the street flooding a below-grade garage.

An alternative solution is to convert the lower level garage into a basement and completely fill in the reverse-slope driveway. The garage door is removed and the opening is sealed. Then, fill is placed around the former garage until a positive slope is achieved away from the structure, towards the street.

### ***Applicability***

Driveway berms are typically used to address structural flooding that occurs as a result of reverse sloped driveways. Installing a driveway berm in a driveway that is already sloped away from the structure could direct runoff towards the structure.

### ***Advantages***

Driveway berms are one of the few options for correcting structural flooding from reverse sloped driveways. Some of the key advantages of driveway berms include:

- Occupants usually do not have to leave the structure during construction.
- Typically less expensive than structure elevation or relocation.
- Structural flood protection provided without significant changes to the structure.

### ***Disadvantages***

The disadvantages associated with driveway berms are as follows:

- Will not reduce flood insurance premiums.
- Overtopping or failure eliminates any protection provided.
- Interior drainage must be provided.

### ***Design Considerations***

The effectiveness of a driveway berm is impacted by the surrounding grading and drainage area. Some specific design considerations to keep in mind when considering a driveway berm include:

- Slope of the existing driveway
- Tributary area draining toward the structure
- Depth of ponding in the adjacent street
- Possible height of waves caused by traffic in the street.
- Drainage within the garage and lower level of the structure

### ***Constructability***

Some of the key construction elements to consider when constructing a driveway berm are as follows:

- The driveway berm shall be constructed of materials that are not easily erodible
- Compaction of the berm is critical to maintain the desired level of protection.
- Height of the berm shall be constructed in accordance with the design to provide a smooth grade transition.

### ***Construction Cost***

Constructing a driveway berm and replacing the driveway is approximately the same cost as replacing the driveway. This can typically be performed for \$8.00 to \$12.00 per square foot.

Assuming a 16-ft wide suburban driveway, a one foot rise, and a 10:1 transition on each side of the rise, requires a minimum of 20-ft length x 16-ft width is required for reconstruction.

For the purposes of a conservative cost estimate, and to satisfy anticipated homeowner concerns, it's assumed the full driveway would require replacement. Assuming a 35-ft setback, 15-ft apron and 5-ft sidewalk width, the replacement cost would be 55 ft driveway length x 16-ft driveway width = 880 sf x \$12/sf = \$10,560.

### ***Required Maintenance***

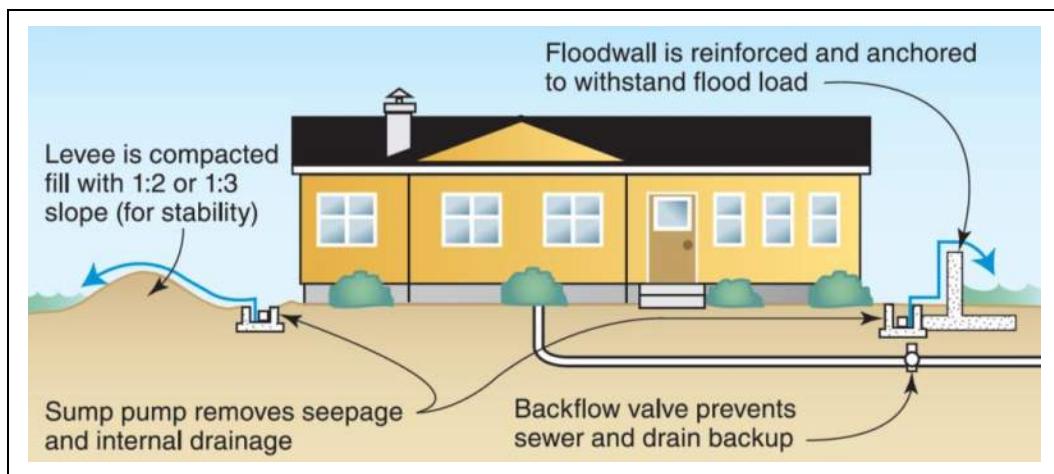
Provided that the driveway berm is constructed of material that is not easily erodible, there is no additional maintenance for the driveway berm in addition to regular maintenance of the driveway.

### ***Flood Reduction Capabilities***

Driveway berms can improve the drainage around a structure and reduce the occurrence of structural flooding; however, they provide a limited amount of protection. The height of the berm is limited based on the length of the driveway and surrounding grading. When creating a high point in the driveway, the slope of the driveway must remain within the allowable limits set by the local ordinances. Additionally, if there is a sidewalk across the driveway, the slope of the sidewalk must remain in compliance with ADA requirements. Driveway berms may reduce the occurrence of structural flooding, but will not reduce the volume of stormwater runoff.

## **Barriers (Berms/Levees/Floodwalls)**

When properly designed and constructed, berms and levees can be effective in reducing structural damage from overbank flooding. The sides of a levee or berm are sloped to provide stability and resist erosion, thus the width is usually six to eight times its height. As a result, taller levees require more land. A floodwall is an engineered structure made of reinforced concrete or reinforced concrete block and varies in height from 1 foot to 20 feet. Similar to berms and levees, a floodwall can surround a structure or a portion of a structure. A typical levee and floodwall used to protect a residential structure are shown in Figure 1.



**Figure 1. Berm and Levee Examples (Source: FEMA P-312)**

### ***Applicability***

Barriers are not typically used to resolve structural flooding in urban areas due to the potential impacts on adjacent properties; however, there are some situations where this flood mitigation strategy may be used. Some appropriate applications of barriers include:

- Areas outside the regulatory floodplain where the barrier can be constructed without adverse impacts to adjacent properties, and
- Structures with a low opening that can be protected without adverse impacts to adjacent properties.

The local floodplain management ordinance must be reviewed for restrictions on the use of barriers. Levees, berms, and floodwalls may not be used to bring a substantially improved or substantially damaged home into compliance with the local floodplain management ordinance. The height of the barrier needed to adequately protect the structure should also be considered. If the height of the levee, berm, or floodwall would make the project cost-prohibitive, then elevation or relocation of the structure should be considered.

### ***Advantages***

Some of the key advantages of barriers include:

- Reduces the flood risk to the structure and contents (if the design flood level is not exceeded);
- Reduces the physical, financial, and emotional strains that accompany flood events;
- Can protect multiple structures;
- Occupants usually do not have to leave the structure during construction;

- Typically less expensive than structure elevation or relocation; and
- Structural flood protection is provided without significant changes to the structure.

### ***Disadvantages***

Some of the disadvantages associated with barriers are as follows:

- May require land to construct (levees and berms typically require more land than floodwalls),
- Will not reduce flood insurance premiums,
- Overtopping or failure eliminates any protection provided,
- Human intervention is required to seal any openings,
- May restrict access to the structure,
- Interior drainage must be provided, and
- Could cause flooding of upstream and downstream properties.

Floodwalls do not rely as much on its mass to resist flood forces and, therefore, requires less space than a levee of similar height. However, floodwalls are typically higher cost.

### ***Design Considerations***

Some things to consider during the design of a barrier include:

- Levees and floodwalls should be built to protect the residence from predicted flood heights as depicted on FEMA FIRMs, FIS, or local flood vulnerability analysis.
- The higher the levee or floodwall, the greater the depth of water that builds behind it and the greater the water pressure exerted on the barrier. Taller levees and floodwalls must be designed and constructed to withstand the increased pressures.
- Taller levees and floodwalls must be stronger, so they usually require more space than is likely to be available on an individual lot.
- Local zoning and building codes may also restrict the use, size, and location of barriers.
- If the flood depth at the project site is above the practical height limits of available barriers, an alternative mitigation method, such as elevation, should be considered.
- The bearing capacity and permeability of the soils encountered may have a significant impact on the choice of barriers as a flood protection option.
- A berm or floodwall should be as far from the building as possible to reduce the threat of seepage and hydrostatic pressure.

The levee or floodwall can always be overtapped by a higher-than-expected flood regardless of the height of the barrier. Overtopping is a greater concern for a levee than a floodwall because a small amount of overtapping can cause erosion at the top of the levee and cause it to fail.

### ***Constructability***

Some of the key factors to consider when constructing a barrier include:

- To facilitate slope stability as well as maintenance and safe grass mowing, the side slopes of most levees should not be steeper than 1 foot vertically to 3 feet horizontally (1:3).
- Trees and large shrubs should not be located on barriers as they can be overturned during high-wind events and compromise the structural integrity of the levee. When trees and shrubs die, their roots decay, leaving cavities for water to pass through, which can cause the barrier to fail.

### **Construction Cost**

The costs can vary greatly depending on the height, length, construction materials, labor, access closures, interior drainage systems, and the distance between the construction site and the source of the fill dirt used to build the levee or berm. In general, the practical, cost-effective heights of these levees and floodwalls are usually limited to 6 feet and 4 feet, respectively.

FEMA has provided general estimates for unit costs for typical barriers in *Publication 551: Selecting Appropriate Mitigation Measures for Floodprone Structures*. The unit prices provided in Publication 551 were adjusted for inflation and are summarized in Table 1.

**Table 1. Levee/Berm and Floodwall Costs**

Barrier Type	Height Above Ground	Cost per Foot
Levee/Berm	2 Feet	\$ 850
	4 Feet	\$ 1,490
	6 Feet	\$ 2,390
Floodwall	2 Feet	\$ 1,300
	4 Feet	\$ 1,970
	6 Feet	\$ 2,740

Within the Erie/Mayo study area, it's anticipated that a landscaping berm may provide some protection in a few areas. The berms are no more than two feet high. For the purpose of establishing a conservative cost estimate, a cost of \$10,000 per house is used, to reflect site grading and landscape restoration.

### **Required Maintenance**

A barrier requires periodic inspections and maintenance to address any necessary repairs. Small problems, such as cracks, loss of surface vegetation, erosion and scour, animal tunnels, and trees and shrubs can quickly become large problems during a flood event. A barrier should be inspected at least each spring and fall, before each impending flood, and after each flood event.

### **Flood Reduction Capabilities**

Berms, levees, and floodwalls have been proven to protect structures from flooding; however they may increase the risk of flooding upstream and downstream. As a result, there are strict regulations on the construction of barriers that may prevent their implementation in some areas. Typically construction of a barrier will block the flow to an area and that lost storage volume must be compensated. When barriers are used, they are effective up to the design elevation. If the barrier is overtopped, the flood protection is lost.

## **WET FLOODPROOFING**

Wet floodproofing allows floodwaters to enter the enclosed areas of a structure and quickly reach the same level as the floodwaters outside. As a result, there are equalized loads imposed on the exterior walls during a flood and the likelihood of structural damage may be greatly reduced.

Wet floodproofing requires openings in the exterior walls of a structure large enough for the water to flow through the structure. The openings must be sized to allow the water level inside the structure to rise and fall with the elevation of the water outside of the structure. This equilibrium of floodwater prevents hydrostatic pressure from damaging structural walls.

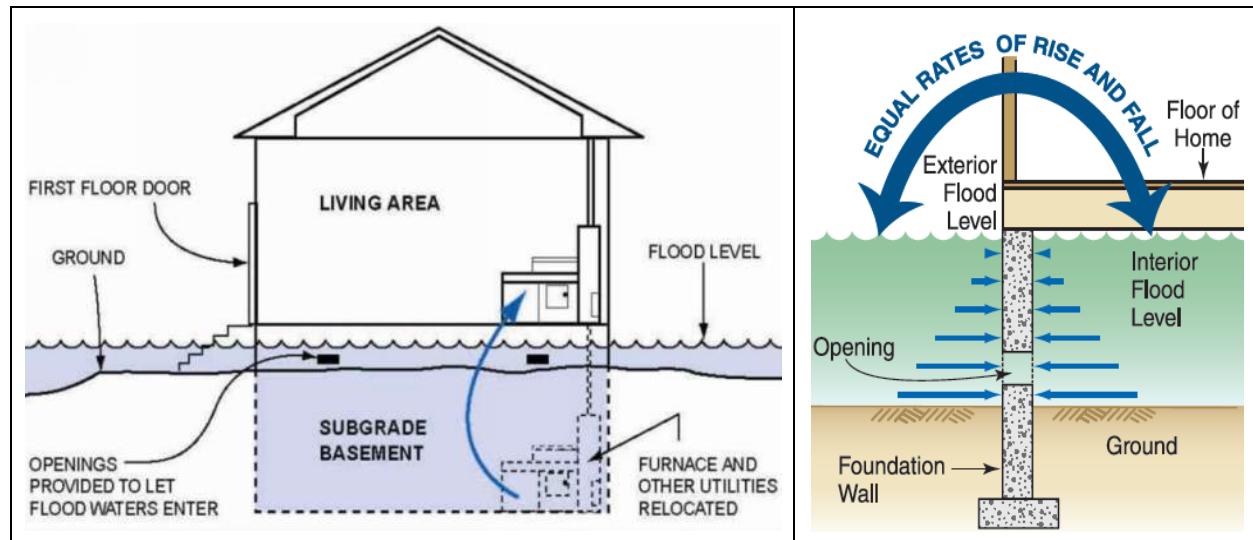
The two primary wet floodproofing techniques are installing openings and elevating utilities. These two techniques are discussed in the following subsections.

### **Installing Openings**

Openings can be installed in the exterior walls of structures to allow floodwaters into uninhabited portions of an existing structure such as basements, crawlspaces, or attached garages or to the area below an elevated structure. Successful wet floodproofing typically involves the following:

- Allowing floodwaters to enter and exit the structure without the use of pumps;
- Ensuring that floodwaters inside the structure rise and fall at the same rate as floodwaters outside the structure;
- Reducing damage caused by contact with floodwaters to areas of the home that are below the flood level;
- Protecting service equipment inside and outside the structure; and
- Relocating high-value contents above the anticipated water level.

A typical example of a residential structure with openings is provided in Figure 2 along with a graphic showing the equalization of pressure on both sides of the opening.



**Figure 2. Wet Floodproofing Example (FEMA P-312, June 2014).**

Alternative flood mitigation options should be carefully reviewed before installing openings and allowing floodwaters into a structure.

### ***Applicability***

Several examples of enclosures that require openings include:

- Solid perimeter foundation walls (crawlspaces, under-floor spaces, below-grade crawlspaces, and full-height under-floor spaces);
- Garages attached to elevated buildings;
- Enclosed areas under elevated buildings;
- Enclosed areas with breakaway walls under buildings elevated on open foundations in A zones;
- Solid perimeter foundation walls on which manufactured homes are installed; and
- Accessory structures (detached garages and storage sheds).

### ***Advantages***

Some of the key advantages of installing openings include:

- Reduces the potential of structural damage by minimizing flood forces on the structure; and
- Lower cost alternative compared to dry floodproofing.

### ***Disadvantages***

Some of the disadvantages of installing openings that should be considered before installing openings on a structure include:

- May require human intervention to function;
- Residential flood insurance premiums are not affected by wet floodproofing;
- Dirty floodwater will inundate the wet floodproofed area, which must be cleaned, sanitized, and dried out following a flood event; and
- Should not be used for areas to be used as living space.

### ***Design Considerations***

Some specific design considerations to keep in mind before installing openings include:

- A minimum of two openings must be provided on different sides of each enclosed area;
- Openings must have a total net area of not less than 1 square inch for every square foot of enclosed area subject to flooding; this criterion is not required if openings are engineered and certified;
- The bottom of all openings must be no higher than 1 foot above exterior or interior grade; and
- Openings may be equipped with screens, louvers, or other coverings or devices, provided these components permit the automatic entry and exit of floodwater and do not reduce the net open area to less than the required open area.

### ***Constructability***

Some of the key constructability considerations regarding openings include:

- The NFIP regulations do not allow buildings to be constructed with areas that are below grade on all sides (basements), except for certain engineered non-residential buildings that are designed and certified to be floodproofed. Therefore, crawlspaces that are below-grade on all sides are not allowed;
- Care should be taken when placing backfill, topsoil, and landscaping materials around the outside of enclosures, especially solid perimeter foundation walls. If the finished exterior grade is higher than the interior grade on all sides of the building, then the enclosed area becomes a basement as defined by the NFIP; and
- The trench that is excavated to construct footings and foundation walls must be backfilled completely, otherwise a basement is created. If the interior grade is higher than the exterior grade, the openings are to be no higher than 1-foot above the interior elevation.

#### ***Construction Cost***

Installing openings is typically completed as part of a larger project (structure elevation, or construction of a new structure). The added cost for installing openings is typically negligible compared to the overall cost of the larger project.

#### ***Required Maintenance***

The screens on openings in areas where floodwaters are expected to carry debris, such as grass clippings and leaves, tend to clog. Local officials may determine that additional openings are required to increase the likelihood that they will perform as expected, even if some openings become clogged with debris.

#### ***Flood Reduction Capabilities***

Installing openings allows water into the structure, eliminating differential pressure on either side of an enclosed space and preventing collapse of those walls as a result. There is not a reduction in flooded properties by installing openings, but there could be a reduction in flood damages.

## **Elevating Utilities**

Raising utilities above the anticipated water level protects them from being submerged during a storm event, thus minimizing replacement costs. When essential equipment is located below grade, elevating typically requires relocating the equipment to higher floors in the building. Unless space is already available, moving the equipment to a higher floor may reduce the available living space. Building owners may need to evaluate all available space, including the attic and second floor, to determine whether a small elevated addition would be an acceptable solution. Some examples of elevated utilities are shown in Figure 3.



***Figure 3. Elevated Utilities Examples.***

Elevating utilities can reduce replacement costs following a flood event and also reduces the health risks to homeowners. Electrical equipment exposed to water can be extremely dangerous if reenergized without proper reconditioning or replacement. When these systems are elevated above the water level, the risk of electric shock is greatly reduced.

For buildings constructed in the floodplain, there is a risk of serious flood damage to most, if not all, building utility systems constructed below the DFE. The level of risk depends on several factors, including the number of utility systems located below the DFE and their location relative to the building footprint.

### ***Applicability***

Equipment that must be placed in areas prone to flooding should be designed to (1) minimize disruptions to the portions of the mechanical systems that are above the floodwaters and (2) facilitate removal and replacement of flood-damaged mechanical equipment.

The most effective flood-resistant design of electrical systems in new and substantially improved buildings in flood-prone areas is elevation of all electrical components to levels at or above the DFE. Elevation gives the most assurance possible that, during a flood, the electrical system components would not be inundated by floodwaters.

### ***Advantages***

Some of the key advantages of elevating utilities include:

- Reduced health hazards following a flood event; and
- Reduction in time the utility is out of service following a flood event.

### ***Disadvantages***

The disadvantages associated with elevating utilities are as follows:

- Utilities are only protected to the design elevation and will not be protected for higher floodwaters and
- Only the elevated utility will be protected from flooding.

### ***Design Considerations***

All equipment that is vulnerable to flooding should be elevated above the DFE or located in dry-floodproofed areas. Equipment that must be placed in areas prone to flooding should be designed to minimize disruptions to the portions of the mechanical systems that are above the floodwaters and facilitate removal and replacement of flood-damaged mechanical equipment. Some design considerations for elevating utilities include:

- When elevating electrical services, the number of switches, wiring, and receptacles below the DFE should be limited to those items required for life safety. The use of motion detecting switches should be limited whenever possible. Use only ground-fault-protected electrical breakers below the DFE. Use drip loops to minimize water entry at penetrations;
- Install HVAC components above the DFE;
- Large central mechanical units such air-cooled chillers, boilers, and pumps, should be placed above the DFE;
- Evaporator towers can be placed below the DFE if they can be readily cleaned or if the evaporative media are replaced after being in contact with floodwaters;
- HVAC controls should be placed as high as possible and installed in a way that facilitates their replacement if they are damaged by floodwaters;
- Central processing units that provide supervisory control can and should be installed above the DFE;
- Dedicated air handling units should be installed to serve flood-prone areas. Air handling units vulnerable to flood damage should have independent supplies, returns, and ventilation ducts that prevent cross contamination of conditioned air between areas damaged by floodwaters and those above the floodwaters;
- Isolation valves should be installed to allow damaged HVAC components to be replaced without requiring draining or disrupting chilled water or hot water distribution systems; and
- Domestic water lines supplying fixtures in flood-prone levels should be isolated from domestic water lines serving upper floors.

### ***Constructability***

Some of the key constructability considerations for elevating utilities include:

- Sewer services should rise above the DFE before connecting to the public sewer. To ensure safety, a backflow prevention valve or gate should be installed between the overhead portion and the point of connection to the municipal sewer. A back-up source of power should also be installed.
- Encase any wiring below the DFE in non-corrosive conduit that is installed vertically to promote thorough drainage.

- Elevate HVAC equipment above the DFE, or as high as possible
- Elevate duct work above the DFE or replace it with watertight ducts.
- Locate return and supply registers above the DFE or allow ample access for cleaning, thorough drainage, and install them without insulation to prevent mold growth in the ducts.
- Elevate wiring, receptacles, outlets, and switches above the DFE, or as high as possible. Place any receptacles below the DFE on one or two separate circuits. Install and clearly identify ground fault circuit interrupter breakers on those circuits. Receptacles and switches below the DFE should be installed in non-corrosive boxes with holes in the bottom to facilitate drying. The receptacles must be replaced after inundation by floodwaters.

***Construction Cost***

There is minimal additional cost to elevate a utility when it is being installed or replaced, provided the elevation can be achieved with minimal changes to the existing infrastructure. As the height needed to protect the utility increases, the cost and changes to other infrastructure increase as well.

***Required Maintenance***

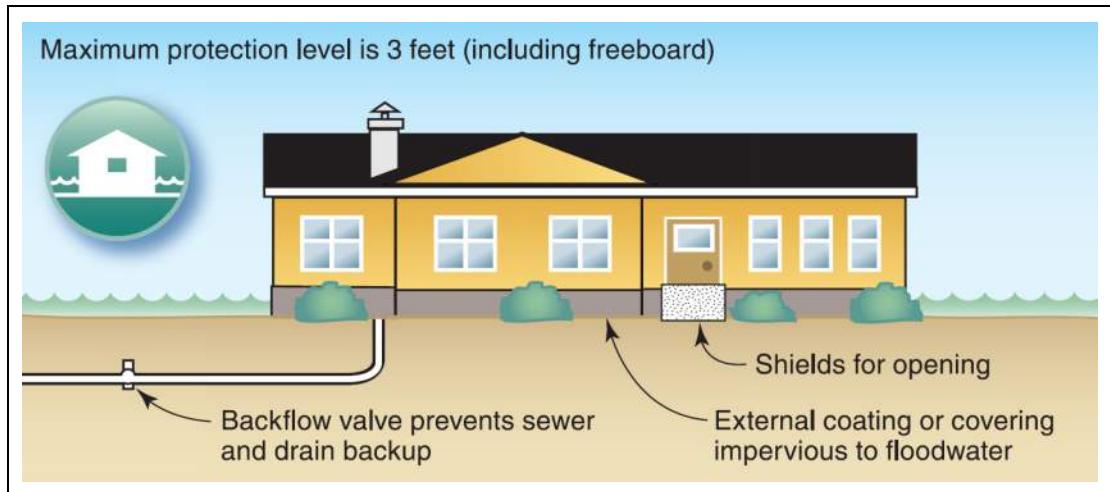
The elevated utility has the same maintenance requirements as it did before it was elevated. The platform or bracket used to elevate the utility should be inspected annually and replaced as needed.

***Flood Reduction Capabilities***

Similar to installing openings, elevating utilities does not prevent flooding, but it does reduce the flood damages to the utilities that were elevated. All other utilities below the flood protection elevation remain susceptible to flooding and the elevated utility is only protected as long as the floodwaters do not rise above the flood protection elevation.

## **DRY FLOODPROOFING**

Dry floodproofing completely seals the exterior of a building, below the anticipated water level, to prevent the entry of floodwaters keeping the interior of the structure dry. An example of dry floodproofing is provided in Figure 4.



**Figure 4. Dry Floodproofing Example (FEMA P-312, June 2014).**

Unlike wet floodproofing, which allows water to enter the building through wall openings, dry floodproofing seals all openings below the flood level and relies on the walls of the building to keep water out. Even if a structure is dry floodproofed, water can still seep through small openings in the sealant system or through the gaskets of shields that are protecting openings. Internal drainage systems are required to remove any water that has seeped through and remove water collected from any necessary underdrain systems in the below-grade walls and floor of the home.

Dry floodproofing is not a good option for areas where floodwater is deep or flows quickly. The hydrostatic pressure and/or hydrodynamic force can structurally damage the building by causing the walls to collapse or causing the entire structure to float. Because the walls are exposed to floodwaters and the pressures they exert, dry floodproofing is practical only for homes with walls constructed of masonry or poured concrete and only where flood depths are low (typically no more than 2 to 3 feet).

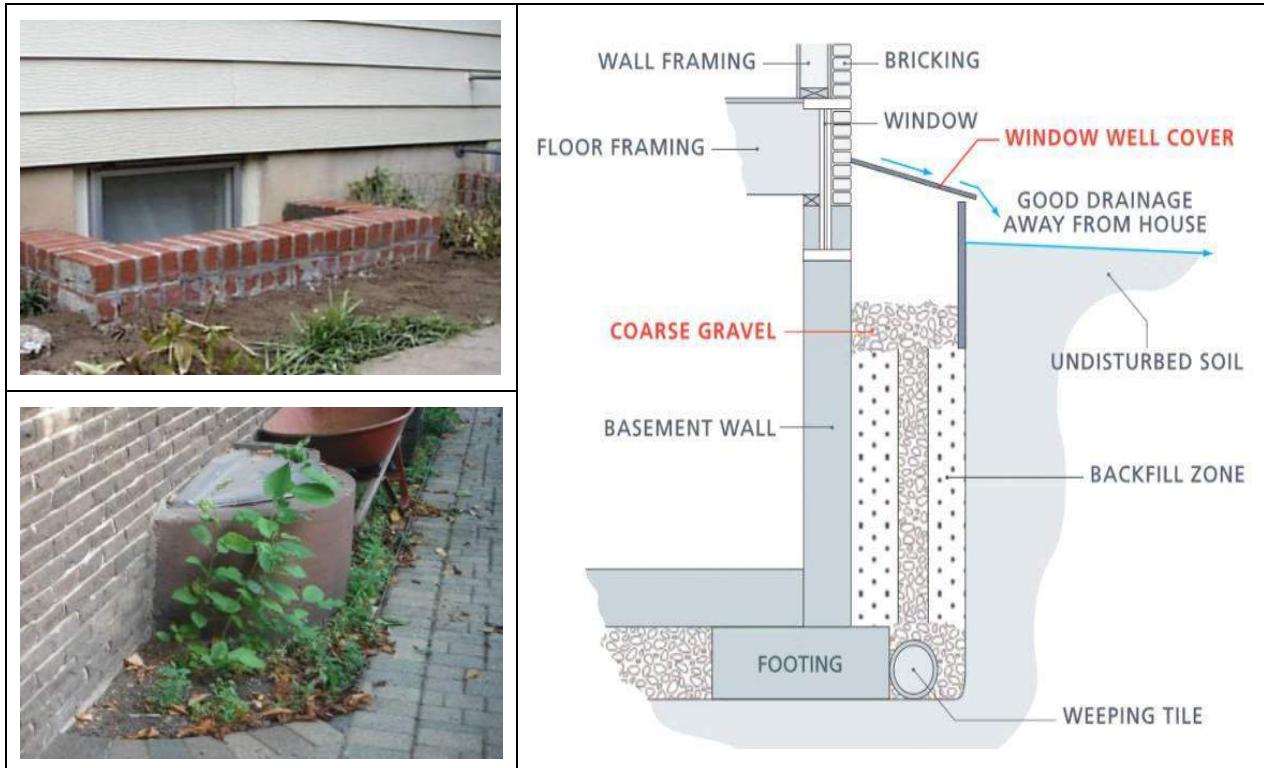
Areas that have minimal velocity and low depth, dry floodproofing can be a good option. Dry floodproofing may not be used to bring a substantially damaged or substantially improved residential structure into compliance with the local floodplain management ordinance. Successful dry floodproofing techniques include:

- Raised Window Wells;
- Glass Block Basement Windows;
- Continuous Impermeable Walls;
- Floodproofed Core Interior Areas;
- Permanent Flood Shields for Exterior Openings;
- Permanent Flood Shields for Exterior Openings; and
- Removable Flood Shields for Exterior Openings.

These techniques are discussed in more detail on the following pages.

## **Raised Window Wells**

Properties that do not have adequate protection of their low opening (window or basement door) can effectively raise the low opening height with a window well. Window wells can help improve drainage around basement windows to prevent water from entering the basement and can reduce dampness inside the structure. Window wells can also help to prevent rotting of window sills, which may compromise the ability of the windows to hold back flood water. Examples of raised concrete window wells are provided in Figure 5.



**Figure 5. Raised Window Wells. (Source: FEMA 551)**

### ***Applicability***

Window wells should be installed around all windows that are close to or below the ground surface. The ultimate height of the window well depends on the level of flood protection desired, appearance, cost and height of the window. The outer edges of the window well should be sealed to the side of the structure and the bottom of the well should be a least six inches below the underside of the window.

### ***Advantages***

Some of the key advantages of raised window wells include:

- Reduces the flood risk to the structure and contents (if the design flood level is not exceeded);
- Reduces the physical, financial, and emotional strains that accompany flood events;
- Typically less expensive than structure elevation or relocation; and
- Structural flood protection is provided without significant changes to the structure.

### ***Disadvantages***

Some of the disadvantages associated with barriers are as follows:

- Will not reduce flood insurance premiums,
- Overtopping or failure eliminates any protection provided, and
- May restrict egress access to the structure,

### ***Design Considerations***

Some things to consider during the design of a raised window well include:

- The height of the raised window well typically should not exceed 2 or 3 feet;
- Local zoning and building codes may also restrict the use of raised window wells; and
- The bearing capacity and permeability of the soils encountered may have a significant impact on the use of raised window wells.

The raised window well can always be overtapped by a higher-than-expected flood regardless of the height of the barrier.

### ***Constructability***

Some of the key factors to consider when constructing a raised window well include:

- To improve the drainage inside the window well, a mixture of coarse material such as gravel and soil should be placed at the bottom of the well;
- Proper lot grading is recommended that directs overland water away from window wells and building walls; and
- If there is the potential for a large volume of roof water to overflow the gutters and spill directly into the window well, or if large amounts of rain can fall into the well, a window well cover should be installed to divert this rainwater away from the window and house. The window well cover will reduce the chances that water will enter the basement through the window and reduce the amount of water that enters the foundation drainage system.

### ***Construction Cost***

The cost of constructing a raised window well varies depending upon the material used, size of the window, and height the window well is raised. A typical range of \$600 - \$2,000 per window can be anticipated. For a conservative estimate, this report assumes \$2,000 per window.

### ***Required Maintenance***

Raised window wells require periodic inspections and maintenance to address any necessary repairs. The window and the seal around the window should be checked annually for cracks and potential leaks. Also, there should be positive drainage away from the window well.

### ***Flood Reduction Capabilities***

*If the low opening to the structure is a window well and overland flow is getting into the structure through the window well, raising it can reduce the structural flooding that results from this low opening. However, the flood protection is limited. Only the structure with the elevated window well will see a reduction in flooding. Also, the level of flood protection is limited to the height of the window well, which should not exceed 2 or 3 feet.*

## **Glass Block Basement Windows**

An alternative to a raised window well is to remove the glass from the window and replaced it with glass blocks. When installed properly, glass blocks can withstand the pressure of a small amount of ponding floodwaters. The glass blocks will reduce the occurrence of seepage through a lower level window; however, they can only be used in limited applications. Some examples of low level windows that were successfully replaced with glass blocks are shown in Figure 6.



***Figure 6. Glass Block Window Examples.***

Another alternative to sealing low level windows with glass blocks is to replace the window with submarine glass systems. This alternative is used when glass blocks are not desired or when the depth of ponding water exceeds the recommended depth for glass blocks.

### ***Applicability***

Replacing a window with glass blocks will render the window inoperable, but the glass will still allow natural light into the area. If the window is serving as an emergency exit, it cannot be replaced with glass blocks. Similar to glass blocks, submarine glass will render the window inoperable, but the natural light will still be provided into the area. Floodproofed core areas should not be used in the following areas:

- Where floodwaters are known to carry debris
- Areas with high velocities or where there is wave action,
- Areas where floodwaters remain high for 24 hours or more, and
- Structures with frame and masonry veneer walls.

### ***Advantages***

Some of the advantages of glass block basement windows include:

- Reduces the flood risk to the structure and contents if the design flood level is not exceeded;
- May be less costly than other retrofitting measures;
- Does not require the extra land;
- Reduces the physical, financial, and emotional strains that accompany flood events; and
- Retains the structure in its present environment.

### ***Disadvantages***

The disadvantages associated with glass block basement windows are as follows:

- Does not satisfy the NFIP requirement for bringing Substantially Damaged or Improved residential structures into compliance;
- Requires ongoing maintenance;
- Does not reduce flood insurance premiums for residential structures;
- May not provide protection if measures fail or the flood event exceeds the design parameters;
- May result in more damage than flooding if design loads are exceeded, walls collapse, floors buckle, or the building floats;
- Does not eliminate the need to evacuate during floods;
- May adversely affect the appearance of the building;
- May lead to damage of the building and its contents if the glass blocks leak; and
- Does not minimize the potential for damage from high-velocity flood flow and wave action.

### ***Design Considerations***

Some things to consider during the design of a barrier structure include:

- Flood duration should be less than 24 hours,
- Flow velocity,
- Warning time,
- Floodborne debris, and
- Adjacent or shared walls.

Also, anchorage of the window frame and attachment of mullions to the frame and the seals between the window and the frame must be considered because they are common places that fail or leak.

### ***Construction Cost***

Cost for construction will vary based on accessibility, type of block chosen, size of window and condition of existing window openings but is expected to cost between \$500 and \$1000 per window treated. This report assumes \$1,000 per window.

### ***Required Maintenance***

The components of glass block basement windows must be inspected and maintained to maintain the flood protection from this practice. The glass blocks and the seal around the window should be checked annually for cracks and potential leaks.

### ***Flood Reduction Capabilities***

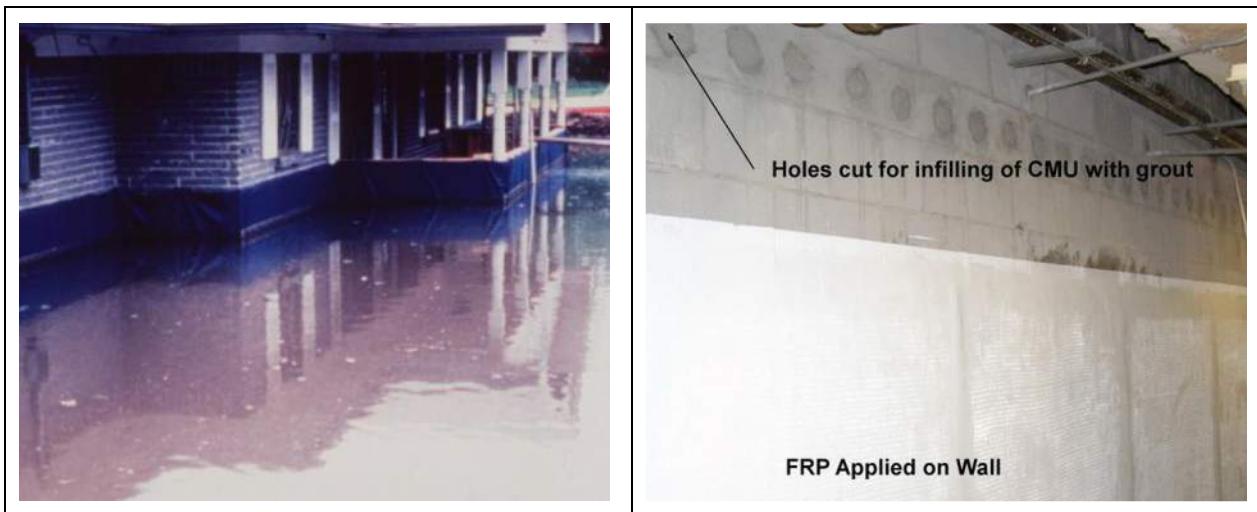
If the low opening to the structure is a lower level window and overland flow is getting into the structure through the window, installing glass blocks can reduce the occurrence of structural flooding. However, the flood protection is limited. Only the structure with the glass block window will see a reduction in flooding. Also, the level of flood protection is limited based on the sealant and strength of the glass blocks.

## **Continuous Impermeable Walls**

A continuous impermeable wall is substantially impermeable to the passage of water, and capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy. After the primary wall system and foundation have been strengthened to resist flood loads (if necessary), the building must be sealed and entry points (e.g., windows, doors, utility points of entry) must be evaluated to determine how best to prevent floodwaters from entering the enclosed area.

In some instances, it may be more cost-effective to construct a continuous impermeable wall on the outside of the existing wall system. Some wall systems, such as steel stud wall systems, may be too difficult to make impermeable, and in those instances a new wall system may be constructed along the perimeter of the existing wall to provide protection.

Creating a waterproof barrier in a section of wall to make it impermeable may require the use of sealants. Sealants are applied directly to the exterior surface of the building to seal exterior walls and floors. Sealants can be either positive-side (applied to the wall exterior where the sealant acts as a barrier between floodwaters and the wall) or negative-side (applied to the interior of a wall or floor where the water pushes against the sealant after it has passed through the wall or slab) as shown in Figure 7.



**Figure 7. Positive-side Sealant (left) and Negative-side Sealant (right) Examples**

Above-ground walls can be sealed using either category of sealant because interior and exterior sides are both typically accessible, while below-ground walls and floor slabs almost always require negative-side sealants. The appropriate sealant for a particular structure is dependent upon the compatibility of the sealant product with the expected duration and depth of flooding and the construction materials in the building.

### ***Applicability***

Continuous impermeable walls work well in the following applications:

- Areas where the velocity of flood flows are low and there is little to no wave action,
- Areas where floodwaters remain high for less than 24 hours, and
- Structures without basements or other below grade living spaces.

Impermeable walls should not be used in areas where floodwaters are known to carry debris or on structures with frame and masonry veneer walls. Also, they should not be used on structures with basements or crawlspaces.

### ***Advantages***

Some of the key advantages of impermeable walls include:

- Reduces the flood risk to the structure and contents, if the design flood level is not exceeded;
- May be less costly than other retrofitting measures;
- Does not require extra land that may be needed for floodwalls or reduced levees;
- Reduces the physical, financial, and emotional strains that accompany flooding; and
- Retains the structure in its present environment and may avoid significant changes in appearance.

### ***Disadvantages***

The disadvantages associated with impermeable walls are as follows:

- Does not satisfy the NFIP requirement for bringing Substantially Damaged or Improved residential structures into compliance
- Requires ongoing maintenance
- Does not reduce flood insurance premiums for residential structures
- May not provide protection if measures fail or the flood event exceeds the design parameters of the measure
- May result in more damage than flooding if design loads are exceeded, walls collapse, floors buckle, or the building floats
- Does not eliminate the need to evacuate during floods
- May adversely affect the appearance of the building if shields are not aesthetically pleasing
- May not reduce damage to the exterior of the building and other property
- May lead to damage of the building and its contents if the sealant system leaks
- Involves increased costs for a design professional
- May require invasive retrofits, and
- Does not minimize the potential for damage from high-velocity flood flow and wave action.

### ***Design Considerations***

The key design considerations when designing impermeable walls are:

- Flood duration should be less than 24 hours,
- Flow velocity,
- Warning time,
- Floodborne debris, and
- Adjacent or shared walls.

Even if both buildings are to be dry floodproofed, it may not be possible to seal all areas of the adjacent walls. The condition of adjacent or shared walls should be thoroughly investigated to ensure that the selected floodproofing measures will be effective.

### ***Constructability***

Constructability will be largely determined on a case by case basis depending on the anticipated flood loads and levels, type and condition of existing wall and foundation systems and condition and type of construction used in the building of the structure.

### ***Construction Cost***

The cost of making a continuous impermeable wall is generally in the middle range compared to the costs of implementing other mitigation measures. Costs that may need to be considered include:

- Preparation of the structure for elevation;
- Elevation of the structure, including cost of steel beams, jacks, etc.;
- Construction of the new, elevated foundation;
- Secure the structure to the new foundation; and
- Replacement or reconstruction of items removed from the structure prior to elevation.

Examples cost estimates from FEMA Publication 551: Selecting Appropriate Mitigation Measures for Floodprone Structures were adjusted for inflation and summarized in Table 2.

***Table 2. Sealant Costs***

<b>Sealant</b>	<b>Cost</b>
Waterproofing a concrete block or brick-faced wall by applying a polyethylene sheet or other impervious material and covering with facing material such as brick	\$ 5.20 / square foot
Acrylic latex wall coating	\$ 4.50 / square foot
Caulking/sealant with a high performance electrometric "urethane" sealant	\$ 3.70 / linear foot
Bentonite grout (below grade waterproofing, 6 feet deep)	\$ 29.40 / linear foot

### ***Required Maintenance***

The components of continuous impermeable walls must be inspected and maintained on a regular basis. Some considerations to facilitate a successful maintenance schedule are as follows:

- Develop an annual inspection plan, and
- Check walls, floors, and floodproof coatings for cracks and potential leaks.

### ***Flood Reduction Capabilities***

The areas that are sealed will be protected from future flooding, as long as the seal is maintained. The level of protection provided depends upon the type of sealant used and the design elevation. Only the areas that are sealed will have a reduction in flood risk.

## **Floodproofed Core Interior Areas**

Critical core components and areas can be made flood resistant even if dry floodproofing the entire building footprint is not needed or possible. Typical critical core areas contain utilities such as electrical services, emergency generators, emergency fuel supplies, and other components that cannot be moved or elevated. In many large complexes or campuses of buildings (such as museums, universities, and large businesses), the utilities may be housed in a central building and linked to the other buildings via tunnels. Although the main utility building may not be at risk of flooding during a particular event, utility tunnels are often subject to more frequent flooding. Examples of watertight doors that would prevent flooding of a utility room are provided in Figure 8.



**Figure 8. Floodproofed Core Area Examples**

An important consideration in making a core area watertight is that floodwater levels may be higher than the height of typical dry floodproofing measures that protect the entire building, and additional anchorage may be needed to make sure the area does not become buoyant. Both the floor system and existing walls should be carefully studied and evaluated. Because these areas are typically designed to be fully resistant to high flood loads, additional anchoring or securing of the core area may be required to resist buoyancy forces.

Core areas can be made watertight by constructing infill walls or retrofitting existing interior walls. Waterproofed walls may be constructed of cast-in-place concrete tied to the floor slab. Fully grouted reinforced CMU walls can also be used to construct the interior walls; however, CMU walls may require additional waterproofing to be considered fully impermeable. Special detailing should be done at the joint between the floor slab and wall as this is a common location for leaks.

If access doors or hatches are necessary below the flood protection level, a hinged door is recommended, so the area can be sealed quickly. Doors or hatches above the flood protection level may allow continuous access even during flood events, but require stairs or ladders. Although stairs or ladders may allow maintenance personnel to access the area during a storm event, they may limit the ability to move items in and out of the area. A pump system is still required to address any unidentified leaks.

### ***Applicability***

Floodproofed core areas work well in the following applications:

- Non-residential buildings
- Areas where the velocity of flood flows are low and there is little to no wave action,
- Areas where floodwaters remain high for less than 24 hours, and
- Structures without basements or other below grade living spaces.

Floodproofed core areas should not be used in areas where floodwaters are known to carry debris or on structures with frame and masonry veneer walls.

### ***Advantages***

Some of the advantages of floodproofed core areas include:

- Reduces the flood risk to the structure and contents if the design flood level is not exceeded;
- May be less costly than other retrofitting measures;
- Does not require the extra land;
- Reduces the physical, financial, and emotional strains that accompany flood events; and
- Retains the structure in its present environment and may avoid significant changes in appearance.

### ***Disadvantages***

The disadvantages associated with floodproofed core areas are as follows:

- Does not satisfy the NFIP requirement for bringing Substantially Damaged or Improved residential structures into compliance;
- Requires ongoing maintenance;
- Does not reduce flood insurance premiums for residential structures;
- Typically requires human intervention and adequate warning time;
- May not provide protection if measures fail or the flood event exceeds the design parameters;
- May result in more damage than flooding if design loads are exceeded, walls collapse, floors buckle, or the building floats;
- Does not eliminate the need to evacuate during floods;
- May not reduce damage to other portions of the building and other property;
- May lead to damage of the building and its contents if the sealant system leaks;
- Involves increased costs for a design professional;
- May require invasive retrofits; and
- Does not minimize the potential for damage from high-velocity flood flow and wave action.

### ***Design Considerations***

The key design considerations include:

- Flood duration should be less than 24 hours,
- Flow velocity,
- Warning time,
- Floodborne debris, and
- Adjacent or shared walls.

### ***Construction Cost***

The cost of floodproofed core areas is similar to the cost of continuous impermeable walls. Refer to the previous section for those costs.

### ***Required Maintenance***

The components of floodproofed core areas must be inspected and maintained on a regular basis. Since this practice includes window and door closures as part of the system, closures must be available and in good condition. Some maintenance requirements include:

- Develop an inventory and location list of all closures,
- Develop an annual inspection plan to ensure closures fit properly,
- Inspect and replace rubberized seals as needed, and
- Check walls, floors, and floodproof coatings for cracks and potential leaks annually.

### ***Flood Reduction Capabilities***

*The areas that are sealed and will be protected from future flooding; however, any areas that are not floodproofed will not see a reduction in flooding or flood damages.*

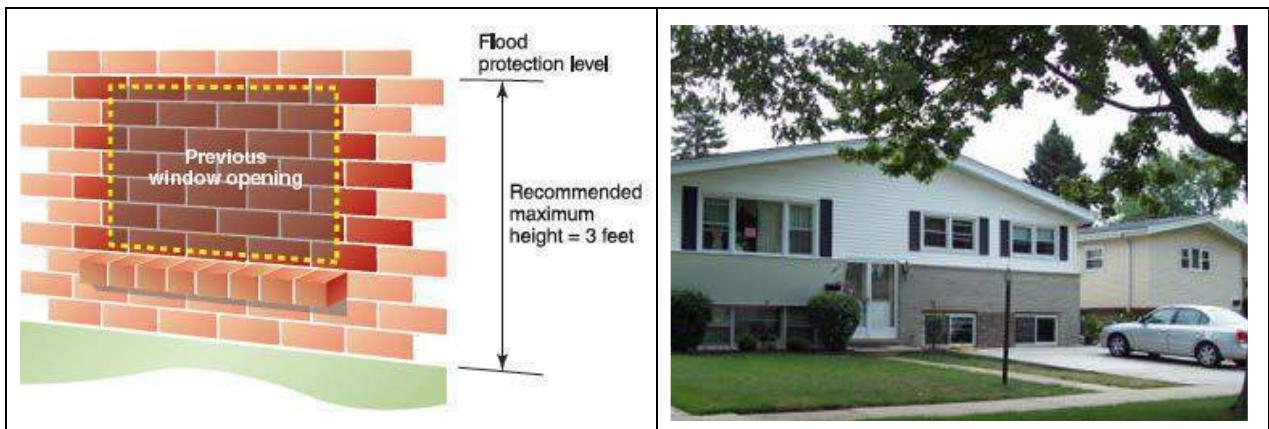
## **Permanent Flood Shields for Exterior Openings**

Basement windows can be the first entry point for floodwaters. Removing a window and incorporating the opening into the wall system may be easier than retrofitting a window with watertight flood shields. The decision of whether to eliminate the window may depend on the following:

- Use of the window (e.g., provides light, means of egress)
- Location of the window on the building, and
- The ease with which the opening can be filled in and incorporated into the wall system

Basement windows may be good candidates for elimination, whereas windows higher on the building may only need to be shielded partially rather than eliminated. Sealing openings should consider the wall or foundation system's ability to resist the loads. Any system of flood doors, panels, or shields will depend on the transfer of the flood loads from the shields to the wall. If the walls or foundation are structurally insufficient to carry these loads, they must be reinforced prior to sealing the opening.

Penetrations through walls for utilities have much narrower openings than those of doors or windows. Gaps in the opening around the utility line should be filled with expansive foam to create a waterproof seal. Sealants used to seal openings in walls or floors should be able to withstand being submerged for the anticipated duration of flooding. Two examples of sealed openings are provided in Figure 9.



**Figure 9. Sealed Window Opening (left) and Sealed Garage Opening (right) Examples**

Nonresidential buildings may have ventilation shafts, exhaust fans, and louvered openings that should be protected with specially fitted flood shields. Placing the flood shields may require shutting down parts of the building or temporarily interrupting some of the building's utilities or mechanical systems. It may be feasible and cost-effective to reroute ventilation shafts, exhaust fans, or other utility openings above the flood protection level to avoid having to shut down some operations during a flood.

### ***Applicability***

Permanent flood shields for exterior openings work well in the following applications:

- Areas that can be re-graded to flow away from the structure, and
- Exterior openings that are not needed for ingress/egress.

### ***Advantages***

Some of the advantages of permanent flood shields for exterior openings include:

- Reduces the flood risk to the structure and contents if the design flood level is not exceeded;
- May be less costly than other retrofitting measures;
- Does not require the extra land to construct;
- Reduces the physical, financial, and emotional strains that accompany flood events; and
- Retains the structure in its present environment.

### ***Disadvantages***

The disadvantages associated with permanent flood shields for exterior openings are as follows:

- Does not satisfy the NFIP requirement for bringing Substantially Damaged or Improved residential structures into compliance;
- Does not reduce flood insurance premiums for residential structures;
- May not provide protection if measures fail or the flood event exceeds the design parameters;
- May result in more damage than flooding if design loads are exceeded, walls collapse, floors buckle, or the building floats;
- May adversely affect the appearance of the building;
- May not reduce damage to the exterior of the building and other property;
- May lead to damage of the building and its contents if the sealant system leaks;
- Involves increased costs for a design professional;

### ***Design Considerations***

The key design considerations include:

- Flood duration should be less than 24 hours,
- Flow velocity,
- Adjacent or shared walls, and
- Local regulations regarding regrading of the site and elimination of an existing opening.

### ***Constructability***

Some constructability considerations for permanent flood shields include:

- Location of rough openings to be sealed;
- Access for workers and materials;
- Availability of finishing materials to match the existing structure's façade;

### ***Construction Cost***

Cost for construction will vary based on accessibility, size and condition of rough opening, type of material used to seal the opening and type of facing material necessary to match the existing structure but is expected to cost between \$500 and \$1000 per window sealed.

### ***Required Maintenance***

The permanent flood shields must be inspected and maintained. An annual inspection plan should be prepared to check walls, floors, and floodproof coatings for cracks and potential leaks.

### ***Flood Reduction Capabilities***

If the low opening to the structure is a lower level window or garage door and overland flow is getting into the structure through the window, sealing the opening can reduce the occurrence of structural

flooding. However, the flood protection is limited. Only the structure with the sealed opening will see a reduction in flooding. Also, the level of flood protection is limited based on the sealant used.

## **Removable Flood Shields for Exterior Openings**

During flood conditions, doors typically present the largest openings requiring protection from water intrusion into the building. Flood shields or panels are watertight structural systems that bridge the openings in walls to prevent the entry of floodwaters. Flood shields work in tandem with waterproof barriers to resist water penetration. Although flood shields are most often temporary measures, they can also be used as a permanent floodproofing measure. Flood shields transfer flood-induced forces to the adjacent structural components, which can overstress the structural capabilities of the building. Most flood shields are mounted against the exterior of the opening, allowing rising floodwaters to further compress the gaskets and seals between the flood shield and the wall system or frame of the opening. Some examples of removable flood shields for exterior openings are provided in Figure 10.



**Figure 10. Example Flood Shields for Exterior Openings.**

The type of shield that is used depends on the size of the opening that needs to be protected, the duration of flooding, the normal use of the opening, warning time available to install the shield and the use of the door as a means of egress from the building. For larger openings, passive (automatic) flood shields may be preferred to active flood shields, which require human intervention. Passive flood shields allow openings to be used until floodwaters reach a certain height. Passive flood shield systems may require room under the opening to allow the flood shield to be stored when it is not in use and may require a backup power supply.

### ***Applicability***

Removable flood shields work well in the following applications:

- Areas where the velocity of flood flows are low and there is little to no wave action,

- Areas where floodwaters remain high for less than 24 hours, and
- Structures without basements or other below grade living spaces.

Removable flood shields should not be used in areas where floodwaters are known to carry debris or on structures with frame and masonry veneer walls.

### ***Advantages***

Some of the advantages of removable flood shields include:

- Reduces the flood risk to the structure and contents if the design flood level is not exceeded;
- May be less costly than other retrofitting measures;
- Does not require the extra land;
- Reduces the physical, financial, and emotional strains that accompany flood events; and
- Retains the structure in its present environment.

### ***Disadvantages***

The disadvantages associated with removable flood shields are as follows:

- Does not satisfy the NFIP requirement for bringing Substantially Damaged or Improved residential structures into compliance;
- Requires ongoing maintenance;
- Does not reduce flood insurance premiums for residential structures;
- Typically requires human intervention and adequate warning time;
- May not provide protection if measures fail or the flood event exceeds the design parameters;
- May result in more damage than flooding if design loads are exceeded, walls collapse, floors buckle, or the building floats;
- Does not eliminate the need to evacuate during floods;
- May adversely affect the appearance of the building if shields are not aesthetically pleasing;
- May not reduce damage to the exterior of the building and other property;
- May lead to damage of the building and its contents if the sealant system leaks; and
- Does not minimize the potential for damage from high-velocity flood flow and wave action.

### ***Design Considerations***

The key design considerations include:

- Flood duration should be less than 24 hours,
- Flow velocity,
- Warning time,
- Floodborne debris,
- Installation requirements, and
- Availability of personnel to seal the opening.

### ***Constructability/Installation Considerations***

Exterior flood shields require human intervention, therefore someone must be willing and able to install all flood shields and carry out all other activities required for the successful operation of the system. As a result, not only must someone be physically capable of carrying out these activities, they must be available in time to do so before floodwaters arrive.

### ***Construction Cost***

The cost for exterior flood shields vary based on the type of shield (manual or automatic), material, and the size of the opening. Some of these are available at big box home improvement stores for \$1,000 in material cost for use in residential applications. The cost estimate assumes \$3,000 each for materials and installation.

#### ***Required Maintenance***

The components of the flood shields must be inspected and maintained on a regular basis. Since this practice includes window and door closures as part of the system, closures must be available and in good condition. Some maintenance requirements include:

- Develop an inventory and location list of all closures,
- Develop an annual inspection plan to ensure the closures fit properly,
- Inspect and replace any rubberized seals as needed, and
- Check walls, floors, and floodproof coatings for cracks and potential leaks.

#### ***Flood Reduction Capabilities***

Removable Flood Shields for Exterior Openings can seal a low opening that is receiving overland flow and reduce the occurrence of structural flooding. However, the flood protection is limited. Only the structure with the sealed opening will see a reduction in flooding. Also, the level of flood protection is dependent on someone being available to correctly install the flood shield in a timely manner.

## **OTHER MITIGATION OPTIONS**

For some structures, dry or wet floodproofing cannot provide adequate protection from future flooding and greater measures must be taken. Other mitigation options include structure elevation, relocation and demolition. Structure elevation is described in the following paragraphs.

### **Structure Elevations**

If the floodwaters are too high for dry floodproofing and the inhabited area is too low for wet floodproofing, it may be necessary to raise the structure. Short of relocating a structure outside a flood-prone area, the best way to protect it from surface flooding is to raise it above the flood level. The three most common elevation techniques are open foundations, continuous foundation walls, and extending existing walls. In all three elevation techniques, the area below the flood level is left open to allow floodwaters to flow under the building, causing little or no damage.

Elevation is usually most cost-effective for buildings on crawlspaces because it is easiest to get lifting equipment under the floor and disruption of the habitable part of the house is minimal. Examples of structures that have been elevated above the 100-year flood elevation are provided in Figure 11.



***Figure 11. Example Elevated Structures***

The ease with which an elevation project can be accomplished usually depends on the building's construction type. A large masonry building is more difficult to elevate than a smaller, compact wood-frame structure. The type of foundation is the most important factor. There are four types of foundations:

1. Crawlspace construction (easiest to elevate);
2. Piers, posts, and pile construction;
3. Basement construction; and
4. Slab-on-grade construction (hardest to elevate).

If the building is elevated eight feet or more, the owner may be tempted to convert the lower area into a habitable living space, which would negate the benefits of the elevation project. One way to help prevent

conversions is to have the owner sign a non-conversion agreement that is recorded on the deed to the property. Since the deed follows the property, future homebuyers are informed of the restrictions.

### ***Applicability***

In DuPage County, the DuPage County Stormwater Management and Flood Plain Ordinance requires all substantially improved residential structures have their lowest floor elevated one (1) foot above the 100-year flood elevation; the City of Wheaton municipal code requires structures to be elevated two (2) feet above the 100-year floodplain elevation. Raising a structure above the flood level on an open foundation (e.g., piles, piers, or posts) is an effective on-site property protection method. Water flows under the building, causing little or no damage to the structure or its contents.

- Elevating structures within the regulated floodplain must comply with local requirements concerning substantial improvements, use of flood resistant materials, protection against flood damage, etc.
- Concrete and masonry buildings and those with slab-on-grade foundations present special difficulties for lifting.
- Not advisable for structures that are in fair or poor condition
- Elevation on fill is not advisable in the floodway

### ***Advantages***

Some of the key advantages of elevating a structure include:

- Dependable way to protect the structure and contents, since everything subject to damage is raised above the flood level;
- Brings a substantially improved or substantially damaged structure into compliance with the National Flood Insurance Program (NFIP) regulations;
- Often reduces flood insurance premiums;
- Qualified contractors are often readily available; and
- Does not require the additional land that may be needed for floodwalls or levees.

### ***Disadvantages***

Some of the disadvantages of installing openings that should be considered before elevating a structure include:

- Elevation can be expensive, especially for large, masonry structures on slab foundations;
- The appearance of the structure may be adversely affected;
- Elevation is not appropriate in areas with high-velocity water flow, fast-moving ice or debris flow, or erosion, unless special measures are taken;
- Some zoning ordinances and subdivision covenants prohibit buildings above a certain height.
- Owners may lose their basements; and
- The surrounding area remains subject to flooding, which may make the structure inaccessible during large storm events.

## ***Design Considerations***

There are three primary methods to elevate structures, which include:

- Open foundation (e.g., piles, piers, or posts)
- Continuous foundation walls (creating an enclosed space below the building), or
- Compacted earthen fill.

Elevating on compacted fill is the most complicated and expensive alternative. The building has to be temporarily moved so the fill can be placed and properly compacted; the building is then moved back to the site. This process may make elevating on fill more costly than elevating on an open foundation or continuous foundation walls. In addition to the type of structure, the following should also be considered during the design process:

- Debris loads on walls or piers
- Special protective measures may be required in areas with velocities more than 5 feet per second
- Structures on the National Register of Historic Buildings may have restrictions that will not allow elevation of the structure, or have special requirements in order to elevate, which must be considered during the design process.
- Increased earthquake, wind, hydrostatic and hydrodynamic forces on the structure.
- Aesthetic treatments around the elevated structure (landscaping, grading, siding, etc.)

## ***Constructability***

Some of the key construction elements to consider are as follows:

- Elevating a structure that has a basement is also more difficult because the support structures for the lifting beams must be constructed outside of the basement's footprint in order to begin the lifting process.
- Additional supports are needed to lift the slab without damage. The area under the slab must be excavated to insert the lifting equipment and disconnect utilities. Alternatively, the structure can be removed from the slab, elevated, and place upon a new floor.
- In order to elevate a structure, there must be enough room free from obstructions. Construction easements on neighboring properties may be necessary and should be obtained in advance.
- Access to the structure following elevation must be considered. Alternatives include ramps, stairs, and/or elevators.
- Requirements in the local building code and floodplain ordinance must be followed.
- The occupants of the structure will need to be relocated for 1 to 3 months.

## ***Construction Cost***

The cost of elevating a structure is generally in the middle range compared to the costs of implementing other mitigation measures. Costs that may need to be considered include:

- Preparation of the structure for elevation;
- Elevation of the structure, including cost of steel beams, jacks, etc.;
- Construction of the new, elevated foundation;
- Secure the structure to the new foundation; and
- Replacement or reconstruction of items removed from the structure prior to elevation.

Examples cost estimates from *FEMA Publication 551: Selecting Appropriate Mitigation Measures for Floodprone Structures* were adjusted for inflation and summarized in Table 3.

**Table 3. Structure Elevation Costs**

Structure Type	Cost/square foot
Wood-frame building on piles, posts, or columns	\$ 53
Wood-frame on concrete or building foundation walls	\$ 47
Brick walls	\$ 64
Slab-on-grade	\$ 67

If a structure has been substantially damaged and it had flood insurance at the time the flood damage occurred, the structure is eligible for Increased Cost of Compliance (ICC) coverage and can receive up to \$30,000 towards the cost of elevating the structure. Additionally, structure elevation is eligible for FEMA Hazard Mitigation Grant Program (HMGP) funding. HMGP funding is not guaranteed and does require a non-federal cost share; however, these funds can help offset the cost of structure elevation.

#### **Required Maintenance**

The additional maintenance required for the structure after it has been elevated structure is minimal. The following maintenance should be performed annually:

- Inspection of the supports for the elevated structure,
- Removal of debris under the structure, and
- Correction of any erosion.

#### **Flood Reduction Capabilities**

Structure elevation permanently mitigates the flood risk to the structure involved, since the structure is elevated above the anticipated water level. The area beneath the elevated structure, however, will continue to flood. Additionally, access to an elevated structure during a storm event may be restricted.

## **REFERENCES**

FEMA. 1999. *Protecting Building Utilities From Flood Damage*. FEMA P-348. Available at

FEMA. 2005. *Reducing Damage from Localized Flooding: A Guide for Communities*. FEMA P-511. Available at [www.fema.gov/media-library-data/20130726-1446-20490-0539/FEMA511-complete.pdf](http://www.fema.gov/media-library-data/20130726-1446-20490-0539/FEMA511-complete.pdf).

FEMA. 2007. *Selecting Appropriate Mitigation Measures for Floodprone Structures*. FEMA P-551. Available at [www.fema.gov/media-library-data/20130726-1609-20490-5083/fema\\_551.pdf](http://www.fema.gov/media-library-data/20130726-1609-20490-5083/fema_551.pdf).

FEMA. 2008. *Openings in Foundation Walls and Walls of Enclosures*. FEMA TB-1. Available at [www.fema.gov/media-library-data/20130726-1502-20490-9949/fema\\_tb\\_1\\_1.pdf](http://www.fema.gov/media-library-data/20130726-1502-20490-9949/fema_tb_1_1.pdf).

FEMA. 2013a. *Floodproofing Non-Residential Buildings*. FEMA P-936. Available at [www.fema.gov/media-library-data/9a50c534fc5895799321dcdd4b6083e7/P-936\\_8-20-13\\_508r.pdf](http://www.fema.gov/media-library-data/9a50c534fc5895799321dcdd4b6083e7/P-936_8-20-13_508r.pdf).

FEMA. 2013b. *Reducing Flood Risk and Flood Insurance Premiums for Existing Residential Buildings in Zone A*. Hurricane Sandy Recovery Fact Sheet No. 7. Available at [http://www.fema.gov/media-library-data/1385402350525-0854e30dc59e2567554b87bc3cc94e36/SandyRA7ReducingFloodRisk\\_111913-508.pdf](http://www.fema.gov/media-library-data/1385402350525-0854e30dc59e2567554b87bc3cc94e36/SandyRA7ReducingFloodRisk_111913-508.pdf)

FEMA. 2014. *Homeowner's Guide to Retrofitting*. FEMA P-312. Available at [www.fema.gov/media-library-data/1404148604102-f210b5e43aba0fb393443fe7ae9cd953/FEMA\\_P-312.pdf](http://www.fema.gov/media-library-data/1404148604102-f210b5e43aba0fb393443fe7ae9cd953/FEMA_P-312.pdf).

Georgia Stormwater Management Manual, 2001, Volume 2, Technical Handbook. Available at

Heaney, J.P., Pitt, R., & Field R. (2000). Innovative Urban Wet Weather Flow Management Systems. EPA/600/R-99/029. U.S. Environmental Protection Agency, Cincinnati, OH

## APPENDIX 6

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