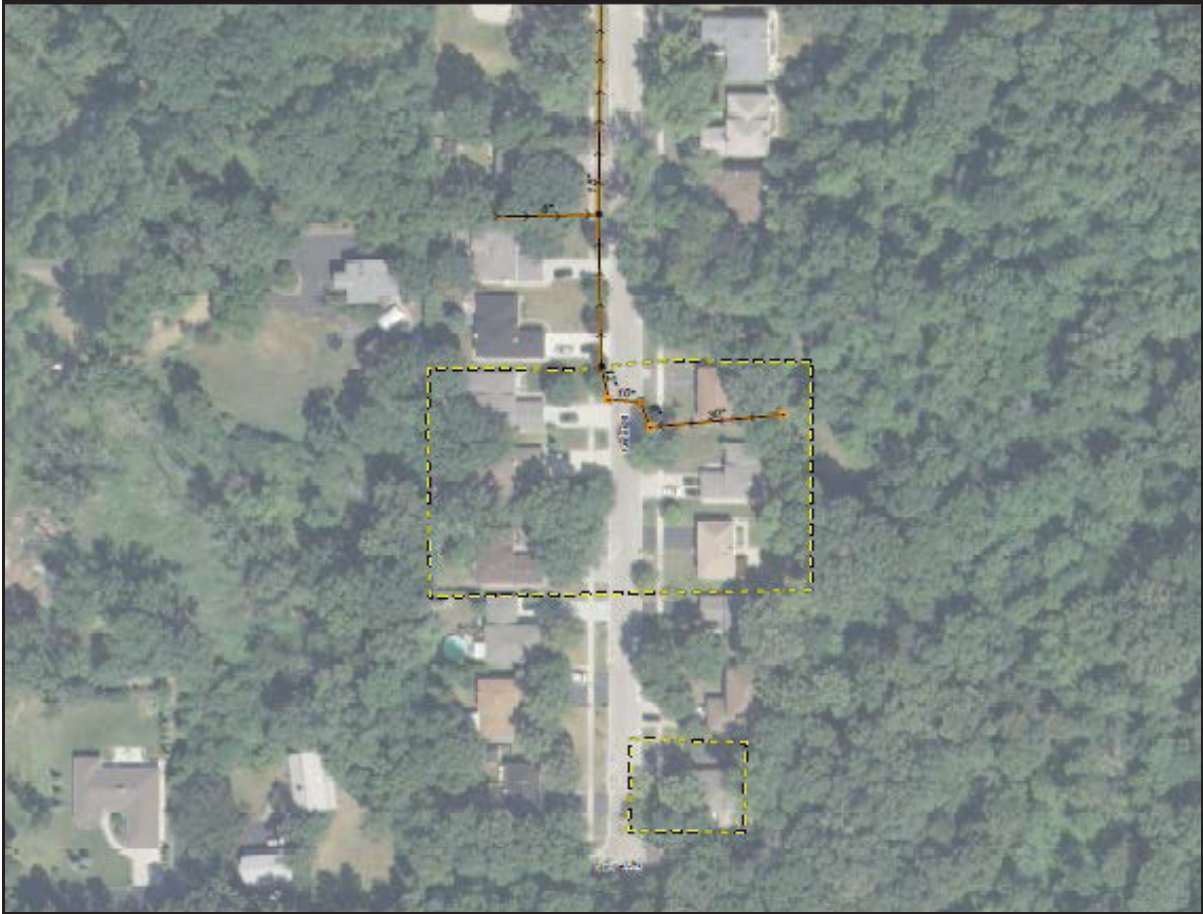


FIGURE 10

Study Area 10



A resident from 304 South Cedar Avenue indicated that there has been flooding from the wooded property to the west ever since he moved into the house in the 1970s. In an attempt to remedy the problem, he excavated a large side yard swale and installed a yard drain system along with some of his immediate neighbors. However, most of the inlets are now covered by sheds. The resident believes the problem may have escalated after a resident near the wooded property dumped concrete on his property; this could have increased the imperviousness of the ground resulting in additional runoff. Finally,

many residents indicated that a few years ago Cedar Avenue was resurfaced and numerous storm inlets were paved over leading to increased street flooding.

According to City staff, 304, 305 and 298 South Cedar Avenue experience excessive side yard flow from the forested property to the west. Runoff from the wooded property to the west flows overland between 298 and 304 South Cedar Avenue to Cedar Avenue. According to our existing conditions XP-SWMM model, the pipes in the south branch of the Cedar Avenue system do not have enough capacity to handle the flows from the wooded area to the west. Also, the 6" and 30" pipes do not adequately convey water away from 301 South Cedar Avenue, resulting in flooding at that property.

327 South Cedar Avenue was also mentioned by the City for Forest Preserve overflow, but the resident reported that the street in front of her house floods up to the top of curb without inundating her home. From survey data, it appears that this location is one of the lower spots in the neighborhood and receives runoff from nearby properties to the west and north.

12.2 Proposed Conditions

The Alternate 1 improvements were based on the 10-year design storm. Street flooding in the southern portion of Cedar Avenue would be eliminated by adding 12" storm sewer pipes and connecting the new pipes to the existing system at 301 Cedar Avenue. The existing 6" pipes at 301 Cedar Avenue heading north would be increased to 12", and the slopes corrected to prevent water from flowing into the home at 301. The pipe on Cedar Avenue just south of the outlet would be increased from 15" to 18". Ample inlet capacity should be added all along the improved pipe segments. With the

improvements, the street inundation would be completely eliminated in all locations (see Exhibit 11). Because the outlet discharges into the forest preserve, it was imperative to assure that the improvements would cause no negative downstream impacts. The improvements for Alternate 1 would increase the Forest Preserve inundation depth by a mere 2.8" and would increase the peak outlet flow by 1.0 cfs.

The improvements for Alternate 2 were based on the 100-year design storm. As with Alternate 1, Alternate 2 would also add 12" pipes to Cedar Avenue's southern unsewered area and connect it to the existing system. The existing system beginning at 301 Cedar Avenue would be increased to 30" pipes which lead to a newly created outlet heading east into the Forest Preserve about 370 feet south of the existing outlet (see Exhibit 12). The additional outlet structure would behave similar to the large pipe and structure at 301 Cedar Avenue that acts as a restrictor and limits the amount of water flowing to the outlet downstream. The two downstream most pipe diameters would be increased from 15" and 32" to 24" and 36". Inlet capacity would be needed along the improved pipe segments. The 100-year alternative would increase the Forest Preserve inundation depth by 1.7" and would increase the flows by 17 cfs.

The total cost of these improvements, including coordination with the Forest Preserve District of DuPage County for Alternate 2, along with design and construction engineering, is estimated to be \$162,840 and \$417,850 for Alternates 1 and 2, respectively. Detailed calculations of these costs are included as Appendices 10 and 11. The cost estimates do not include the cost of acquiring easements for installing proposed improvements on private property.

For depressed driveways such as of the one at 301 Cedar Avenue, the resident should consider reconstructing the driveway such that it includes a small berm to provide additional flooding protection.

ERA completed a drainage study of the South Cedar Avenue basin for the City in 2010 and identified a number of alternatives. Two of the ERA alternatives contained major components of the two alternatives currently proposed in this study. These include replacing the existing sewer along Cedar Avenue with a larger sewer and constructing a parallel sewer along Cedar Avenue. Two other alternatives proposed in that study involved purchasing private property to construct detention basins. Appendix 15 includes exhibits showing the ERA alternatives.

13. MONTCLARE LANE AND NORTH CEDAR AVENUE (AREA 11)

The Montclare Lane and North Cedar Avenue area is shown as Area 11 on Exhibit 1. The area of interest on Montclare Lane is 121 South Montclare Lane. Storm sewer along Montclare Lane flows south to a larger system at Murray Drive.

The area of interest on North Cedar Avenue is located along Cedar Avenue between Murray Drive and Hiawatha Trail. The nearest storm sewer is located on Cedar Avenue and drains south.

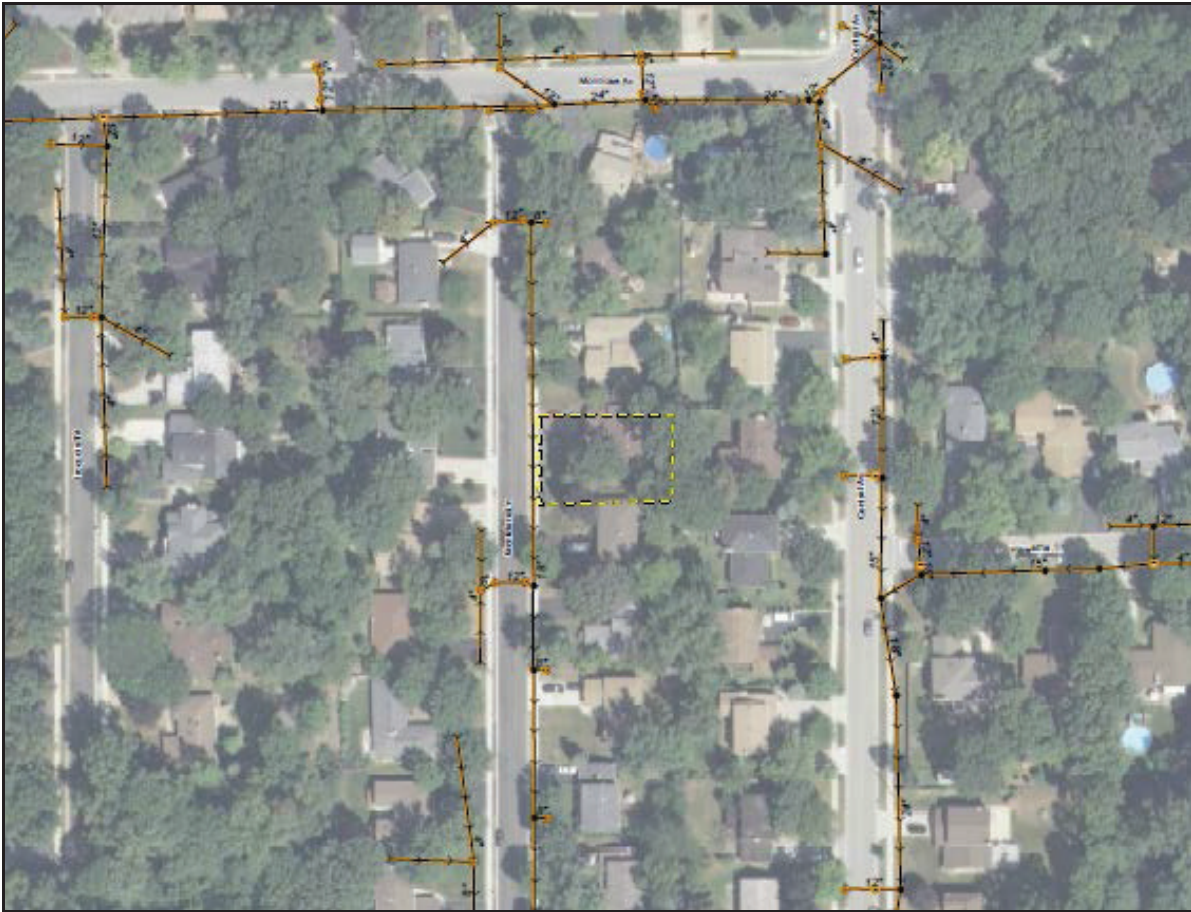
13.1 121 S. Montclare Lane (Area 11-1) Existing Conditions

The Montclare Lane mainline storm sewer system begins just south of Montrose Avenue with an 18" pipe which flows south to a 38" x 24" elliptical pipe at Murray Drive. The elliptical sewer flows east along Murray Drive and then south down South Central Avenue.

The rear yard of 121 South Montclare Lane is the local low area. Based on contour mapping, there is approximately one half acre draining to this location. In an attempt to alleviate the rear yard drainage problem, the resident installed a rear yard trench drain with two sump pits.

FIGURE 11

Study Area 11 - Location 1



According to our existing conditions XP-SWMM model, the storm sewer system along Montclare Lane has excess capacity, but presently there is not a subsurface connection from the rear yard of the subject property to the sewer.

13.2 121 South Montclare Lane (Area 11-1) Proposed Conditions

A 12" storm sewer connection from the rear yard of 121 South Montclare Lane to the Montclare Lane storm sewer was included in the proposed conditions XP-SWMM model. An inlet with a Type 8 Grate should be added at the upstream end of the

proposed sewer to increase inlet capacity in the rear yard. The modeling demonstrates that for the critical duration storm, the flooding problem can essentially be eliminated.

It is recommended that a check valve be installed near the upstream end of the proposed gravity sewer to prevent the storm sewer from back flowing should a surcharge condition occur; however, the homeowner should be advised of potential maintenance concerns associated with check valves. Additionally, the homeowner should continue to maintain the trench drain and sump system to supplement the proposed gravity outlet.

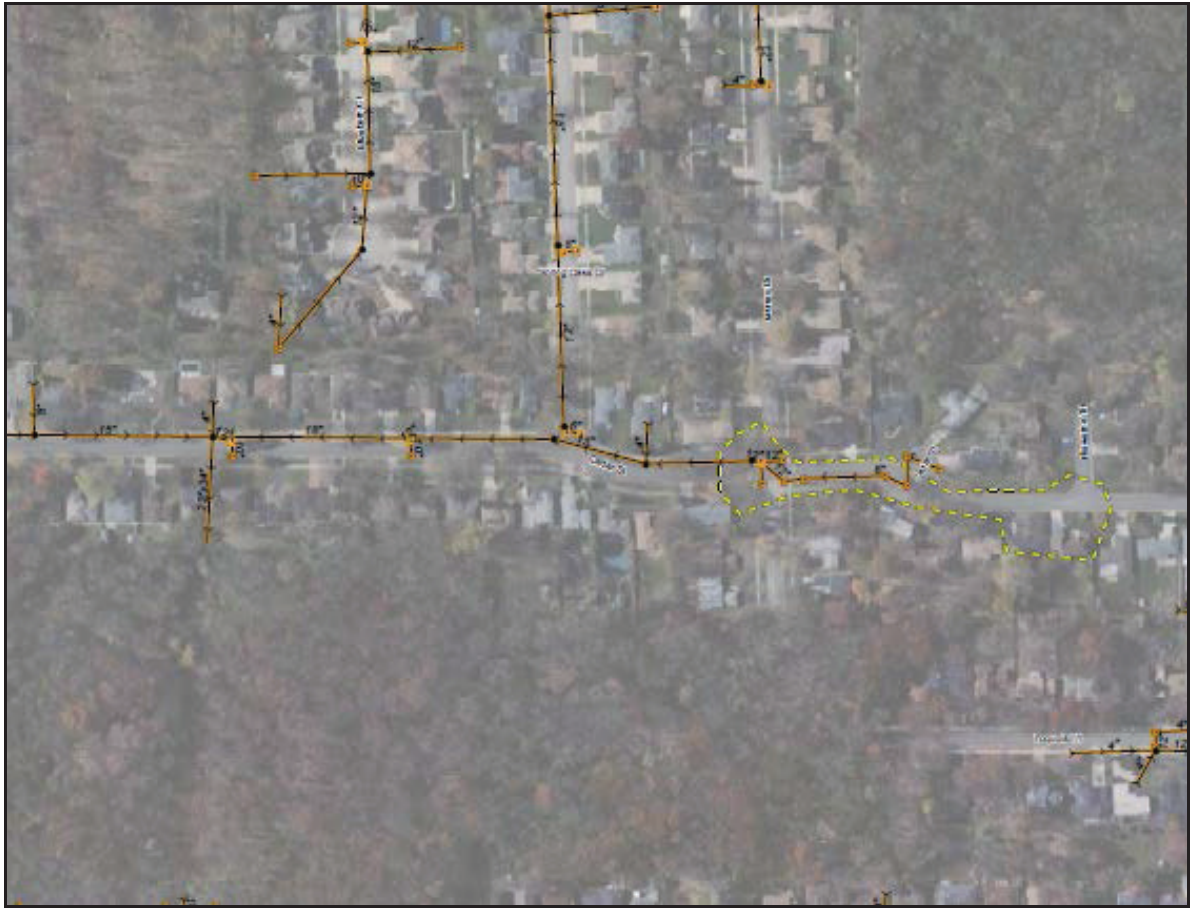
A temporary easement from the owner of the property at 121 South Montclare Lane will be required in order to construct the proposed improvements.

13.3 Road Flooding along North Cedar Avenue (Area 11-2) Existing Conditions

The North Cedar Avenue storm sewer system begins with an 8" pipe at a cul-de-sac just north of Murray Drive which increases in size to 18" before joining with the branch from the south and discharging to the east to a creek in the Forest Preserve via a 22" x 34" elliptical pipe. The tributary area to the North Cedar Avenue sewer includes the homes along Cedar Avenue and Hiawatha Trail; some of the homes along Murray Drive; and a small portion of Forest Preserve east of Cedar Avenue. The total contributing area is roughly 6.5 acres.

FIGURE 12

Study Area 11 - Location 2



A resident described flooding at the intersection of Hiawatha Trail and Cedar Avenue as covering the road over the entire intersection and encroaching on some of the surrounding residential properties. There are no storm sewers along Hiawatha Trail or along Cedar Avenue from Hiawatha Trail to the cul-de-sac just north of Murray Drive. Topographic survey indicates that there is a low spot at the Hiawatha Trail-Cedar Avenue intersection where runoff becomes trapped and ponds.

The profile along Cedar Avenue slopes down towards Murray Drive and then up towards Spring Oaks Drive, creating another low area at the Cedar Avenue-Murray

Drive intersection. According to our existing conditions XP-SWMM model, the pipes in the north branch of the Cedar Avenue system do not have sufficient capacity to handle the flows along Cedar Avenue, resulting in ponding at the Cedar Avenue-Murray Drive intersection. The modeling also indicates that it takes many hours for the intersection to drain down.

13.4 Road Flooding along North Cedar Avenue (Area 11-2) Proposed Conditions

For Alternate 1, the improvements would completely eliminate street flooding at the Hiawatha Trail and Murray Drive intersections with Cedar Avenue for the 10-year storm event. A 12" storm sewer and increased inlet capacity would be needed in the northern unsewered area of Cedar Avenue beginning at Hiawatha Trail to prevent water from inundating the Hiawatha Trail intersection. The proposed pipes would be connected to the existing system which would be increased from 15" to 24", along with an increase in inlet capacity (see Exhibit 12). The Forest Preserve inundation depth would be increased by 1.7", and the peak outlet flow increased by 7 cfs.

Alternate 2 would also require the addition of 12" storm pipes in Cedar Avenue's northern area. Instead of connecting to the existing system farther south on Cedar Avenue, the proposed pipes would connect northward to Montclare Lane. Because the existing Montclare Lane system flows at almost maximum capacity during the 10-year design storm, the downstream pipes would be increased to accommodate the additional flow from Cedar Avenue. All pipes along Montclare Lane east of Cedar Avenue would be increased from 12-24" to 24-36" (see Exhibit 13). Pipes south of the unsewered area on Cedar Avenue would be increased from 8"-18" to 12"-36" with the downstream most Cedar Avenue pipe proposed as an 18" restrictor. Inlet capacity would be needed all

along the proposed improvements. The inundation depth at the Forest Preserve would be decreased by 1.6” inches and the outlet flow would be increased by 6 cfs.

As in Alternates 1 and 2, Alternate 3 would also have 12” pipes in the unsewered region beginning at Hiawatha Trail. All existing downstream pipes would be increased significantly up to 60” (see Exhibit 14). The large downstream pipes would provide stormwater detention within the system, and a 12” restrictor pipe before the outlet would essentially match the peak flow into the Forest Preserve.

The total cost of these improvements, including coordination with the Forest Preserve District of DuPage County (for Alternate 2), along with design and construction engineering, is estimated to be \$530,196, \$1.6 million and \$819,292 for Alternates 1, 2 and 3, respectively. Detailed calculations of these costs are included as Appendices 12, 13 and 14. The cost estimates do not include the cost of acquiring easements for installing proposed improvements on private property.

14. TALL OAKS (AREA 12)

Tall Oaks is shown as Area 12 on Exhibit 1. The Tall Oaks area extends from Cedar Avenue on the west to Central Avenue on the east, and from Sunnyside Avenue on the south to the railroad tracks on the north.

The intersection of Windsor Avenue and Catalpa Avenue floods during extreme storm events. A separate engineering study was performed in this area by URS in 2009 which identified the causes of the flooding. Baxter & Woodman also evaluated this area in 2011 and reached the same conclusion as URS, with respect to the cause of the flooding. The existing HWL of the detention basin located northeast of the Catalpa Avenue and Potter Street intersection is 0.6 ft higher than the design HWL. Additionally, the underdrain in the basin was found to be clogged with sediment.

15. ROYAL OAKS (AREA 13)

Royal Oaks is shown as Area 13 on Exhibit 1. The Royal Oaks area extends from the west ends of Knollwood Drive and Sherwood Drive on the west to Route 83 on the east, and from north of Deerpath Road on the south to just south of Hiawatha Trail on the north.

During larger storm events, the retention pond encroaches onto adjacent properties and takes a long time to drain down. A separate engineering project is underway which includes converting the streets within the subdivision from a rural cross section to an urban cross section with curb and gutter. As part of that project, the retention basin is being analyzed to determine what improvements may be made.

16. CONCLUSIONS AND RECOMMENDATIONS

Baxter & Woodman was retained by the City of Wood Dale to evaluate known areas of flooding and inadequate drainage in order to develop a prioritized list of recommended solutions. Within six designated Study Areas, multiple alternatives were modeled in order to reduce surface flooding in the problem areas to an acceptable level and below all known low entry elevations for the design storm event. The specific reasons for selecting the recommended alternative in each Study Area are noted below.

- Area 1 – Westside Tributary/Georgetown Area – The most promising alternative for this Study Area is Alternative 1, which would include a large detention basin within the ComEd right-of-way. This alternative would minimize the necessary improvements on private residential properties (along Squaw Creek) compared to Alternative 2 and may be more cost effective than Alternative 3. The Alternative 1 concept plan has been submitted to ComEd for review and consideration. In case ComEd will not allow the proposed detention basin within their right-of-way, or in case the cost of obtaining the necessary easement from ComEd would be more expensive than the incremental cost of Alternative 3, we recommend that the City plan to implement Alternative 3. Alternative 2 is not recommended based on the level of improvements that would be necessary on private residential properties. Coordination with ComEd is ongoing and our recommendation for Area 1 will be updated, if necessary, pending the outcome of our coordination with ComEd.
- Area 5 – Woodside and Route 83/Oak Meadows Drive – Alternate 1 (10-Year Improvements) is recommended over Alternate 2 (100-Year Improvements) based on the probable cost of the improvements. The probable cost of implementing Alternative 2 is more than four times the probable cost of Alternate 1. While the number of properties that would benefit from Alternate 2 would also be greater, this incremental benefit does not outweigh the incremental cost. Furthermore, selecting Alternate 1 is consistent with the (10-year) design standard adopted by nearly all northeast Illinois municipalities for storm sewer systems.
- Area 6 - Central Avenue/Beinoris Drive/Creel Drive – Alternate 2 (Online Detention) is recommended over Alternate 1 (Conveyance

Improvements) for two important reasons: Alternate 2 would maintain the existing peak discharge rate from Area 6 to the downstream storm sewer system; and the probable cost of Alternate 2 is nearly half the probable cost of Alternate 1.

- Area 8 - Central Avenue/Ethel Lane/Aspen Road – Alternate 1 (Diversion Ditch) would be recommended over Alternate 2 (Central/Ethel Storm Sewer) based on probable cost, except that preliminary coordination with the Forest Preserve District revealed that the District is not likely to grant the City an easement for the diversion ditch necessary to implement Alternate 1. The minutes from our January 4, 2013 meeting with the District (Appendix 16) describe the process for, and the conditions under which the easement could be granted. For budgeting purposes, the City should plan to implement Alternate 2; however, based on the potential cost savings offered by Alternate 1, the City should accept the District staff's offer to determine whether or not the diversion ditch could be constructed without disturbing any desirable trees. This could be done prior to initiating detailed design of the Area 8 improvements. If it can, it may be worthwhile for the City to formally request an easement from the District Board of Commissioners, considering that the City's drainage problems in this area are the result of runoff from District land.

- Area 10 - South Cedar Avenue – Alternate 1 (10-Year Improvements) is recommended over Alternate 2 (100-Year Improvements) for two important reasons: preliminary coordination with the Forest Preserve District revealed that the District is amenable to Alternate 1, but is opposed to Alternate 2; and the probable cost of Alternate 2 is more than twice the probable cost of Alternate 1 without any additional properties benefitting from Alternate 2. Furthermore, selecting Alternate 1 would be consistent with the (10-year) design standard adopted by nearly all northeast Illinois municipalities for their storm sewer systems. Prior to this Study, ERA completed a study of South Cedar Avenue. The recommendations from that study are included as Appendix 15. Six alternatives were analyzed with varying levels of protection (25- to 100-year improvements); however, we believe that the 10-year improvements proposed in Alternate 1 of this Study are the most cost-effective approach. The minutes from our January 4, 2013 meeting with the District (Appendix 16) describe several requests that the District has for the City regarding detailed design of the recommended improvements.

- Area 11 - Montclare Lane and North Cedar Avenue - Alternate 1 (South Outlet) is recommended over Alternates 2 (North and South Outlet) and 3 (South Outlet for Online Detention) for three reasons: all three alternates provide a similar level of protection; the probable cost of Alternate 1 is

lower than the probable cost of the other alternates; and preliminary coordination with the Forest Preserve District revealed that the District is amendable to Alternate 1. It should be noted that Alternate 2 would benefit a greater number of properties than Alternates 1 and 3, but this incremental benefit does not outweigh the incremental cost. The minutes from our January 4, 2013 meeting with the District (Appendix 16) describe several requests that the District has for the City regarding detailed design of the recommended improvements.

A priority ranking was determined for each of the recommended improvements considering the number of properties that would benefit from the improvements, the cost of the improvements and the timing of other planned capital improvements in the vicinity of the recommended improvements. When considering the properties that would benefit from the improvements, properties known to experience structural flooding were given the most weight. Properties that would experience yard flooding were assigned less weight, while properties that would only be affected by traffic flow due to road closures received the least weight. Planned water main and road improvements along Cedar Avenue (Areas 10 and 11) in FY2014 and street resurfacing planned for Crestwood Road (Area 5), Spruce Road (Area 5), and Aspen Road (Area 8) in FY2016 were factored into the priority rankings shown in Table 1.

TABLE 1

Recommended Priority by Study Area

Priority	Study Area	Cost (Millions)
1	Area 10 - South Cedar Avenue - Alternate 1	\$0.2
2	Area 11 - Montclare Lane and North Cedar Ave. - Alternate 1	\$0.5
3	Area 5 - Woodside and Route 83/Oak Meadows Drive - Alt 1	\$0.2
4	Area 8 - Central Avenue/Ethel Lane/Aspen Road - Alternate 2	\$1.4
5	Area 1 - Westside Tributary/Georgetown Area - Alternate 3	
5.a	Location 1-5 - Gilbert Drive and Forest Preserve Drive	\$0.4
5.b	Location 1-4 - Park Lane	\$2.8
5.c	Location 1-3 - Miller Ln Apartments and 336 Dalewood Ave	\$0.1
5.d	Location 1-2 - Potter Street and Prospect Ave Intersection	\$0.3
6	Area 6 - Central Avenue/Beinoris Drive/Creel Drive - Alt 2	\$1.9
	Total =	\$7.8

The engineer's opinion of probable cost for potential improvements presented in this Study includes the cost of sanitary sewer and water service relocation or adjustment, trench backfill, pavement or lawn restoration, traffic control, erosion control, construction layout and mobilization. It does not include the cost of right-of-way acquisition, temporary or permanent easements, or relocating utilities other than sanitary sewer and water service lines.



City of Wood Dale

Appendix 1 - Engineer's Opinion of Probable Construction Cost
Proposed Improvements for Area 1 - Alternate 1

Area 1-2

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
24" RCP Storm Sewer	Residential Street	0 - 5	450	Foot	\$ 240	\$ 108,000
30" RCP Storm Sewer	Side Yard	5 - 8	190	Foot	\$ 265	\$ 50,350
5' manhole	Residential Street	0 - 5	3	Each	\$ 5,000	\$ 15,000
6' manhole	Residential Street	0 - 5	1	Each	\$ 6,000	\$ 6,000
6' manhole	Side Yard	5 - 8	1	Each	\$ 7,000	\$ 7,000
High Capacity Inlets	Residential Street	N/A	2	Each	\$ 3,250	\$ 6,500
30" FES	Side Yard	0 - 5	1	Each	\$ 1,980	\$ 1,980
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Location Construction Subtotal=						\$ 219,830

Area 1-3

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
36" RCP Storm Sewer	ComEd ROW	5 - 8	65	Foot	\$ 330	\$ 21,450
30"x44" RCP Storm Sewer	ComEd ROW	8 - 12	85	Foot	\$ 650	\$ 55,250
38"x60" RCP Storm Sewer	Residential Street	0 - 5	85	Foot	\$ 650	\$ 55,250
38"x60" RCP Storm Sewer	Residential Street	0 - 5	175	Foot	\$ 650	\$ 113,750
38"x60" RCP Storm Sewer	Residential Street	8 - 12	20	Foot	\$ 650	\$ 13,000
54" RCP Storm Sewer	Residential Street	8 - 12	245	Foot	\$ 550	\$ 134,750
8' Diameter Manhole	ComEd ROW	5 - 8	1	Each	\$ 9,750	\$ 9,750
8' Diameter Manhole	Residential Street	5 - 8	2	Each	\$ 9,750	\$ 19,500
8' Diameter Manhole	Residential Street	8 - 12	2	Each	\$ 11,250	\$ 22,500
Construct Detention Pond			3.73	Ac-ft	\$ 48,000	\$ 179,040
36" FES	ComEd Detention	0 - 5	3	Each	\$ 2,310	\$ 6,930
Dredge channel	N/A	N/A	74.1	CY	\$ 30	\$ 2,222
Remove 44"x66" CMP	N/A	N/A	105	Foot	\$ 250	\$ 26,250
Connect to Existing	N/A	N/A	3	Lump Sum	\$ 25,000	\$ 75,000
Location Construction Subtotal=						\$ 734,642

Area 1-4

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
18" RCP Storm Sewer	Residential Street	0 - 5	180	Foot	\$ 220	\$ 39,600
24" RCP Storm Sewer	Residential Street	5 - 8	330	Foot	\$ 265	\$ 87,450
5' manhole	Residential Street	0 - 5	2	Each	\$ 5,750	\$ 11,500
5' manhole	Residential Street	5 - 8	3	Each	\$ 5,750	\$ 17,250
Inlet	Residential Street	0 - 5	2	Each	\$ 1,000	\$ 2,000
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Location Construction Subtotal=						\$ 182,800

Area 1-5

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
24" RCP Storm Sewer	Residential Street	0 - 5	175	Foot	\$ 240	\$ 42,000
36" RCP Storm Sewer	Residential Street	5 - 8	350	Foot	\$ 330	\$ 115,500
48" RCP Storm Sewer	Residential Street	8 - 12	660	Foot	\$ 480	\$ 316,800
5' Diameter Manhole	Residential Street	8 -12	2	Each	\$ 6,500	\$ 13,000
7' Diameter Manhole	Residential Street	5 - 8	2	Each	\$ 8,250	\$ 16,500
8' Diameter Manhole	Residential Street	5 - 8	4	Each	\$ 9,500	\$ 38,000
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Location Construction Subtotal=						\$ 566,800

Construction Subtotal		\$ 1,704,072
Construction Contingency	20%	\$ 340,814
Construction Total		\$ 2,044,887
Design Engineering	7.5%	\$ 153,367
Construction Observation	7.5%	\$ 153,367
Project Total		\$ 2,351,620

Notes

1. Prices include sanitary sewer and water service relocation/adjustment, trench backfill, pavement or lawn restoration, traffic control, erosion control, construction layout, mobilization and permitting.
2. Prices do not include right-of-way acquisition, temporary or permanent easements, or relocating other utilities.
3. Prices are current for 2012.



City of Wood Dale

Appendix 2 - Engineer's Opinion of Probable Construction Cost
Proposed Improvements for Area 1 - Alternate 2

Area 1-2

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
24" RCP Storm Sewer	Residential Street	0 - 5	450	Foot	\$ 240	\$ 108,000
30" RCP Storm Sewer	Side Yard	5 - 8	190	Foot	\$ 265	\$ 50,350
5' Diameter Manhole	Residential Street	0 - 5	3	Each	\$ 5,000	\$ 15,000
6' Diameter Manhole	Residential Street	0 - 5	1	Each	\$ 6,000	\$ 6,000
6' Diameter Manhole	Side Yard	5 - 8	1	Each	\$ 7,000	\$ 7,000
High Capacity Inlets	Residential Street	N/A	2	Each	\$ 3,250	\$ 6,500
30" FES	Side Yard	0 - 5	1	Each	\$ 1,980	\$ 1,980
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Location Construction Subtotal=						\$ 219,830

Area 1-3

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
38"x60" RCP Storm Sewer	Residential Street	0 - 5	175	Foot	\$ 650	\$ 113,750
38"x60" RCP Storm Sewer	Comed ROW	5 - 8	180	Foot	\$ 750	\$ 135,000
38"x60" RCP Storm Sewer	Residential Street	8 - 12	20	Foot	\$ 650	\$ 13,000
54" RCP Storm Sewer	Residential Street	8 - 12	245	Foot	\$ 550	\$ 134,750
4'x8' RCP Box Culvert	Residential Street	0 - 5	75	Foot	\$ 1,000	\$ 75,000
8' Diameter Manhole	Residential Street	8 - 12	3	Each	\$ 11,000	\$ 33,000
Remove Weir	N/A	N/A	1	Lump Sum	\$ 6,000	\$ 6,000
Remove 44"x66" CMP	N/A	N/A	105	Foot	\$ 250	\$ 26,250
Clear Natural Channel	N/A	N/A	675	Foot	\$ 75	\$ 50,625
Dredge Channel	N/A	N/A	193	CY	\$ 30	\$ 5,790
Connect to Existing	N/A	N/A	3	Lump Sum	\$ 25,000	\$ 75,000
Location Construction Subtotal=						\$ 668,165

Area 1-4

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
18" RCP Storm Sewer	Residential Street	0 - 5	180	Foot	\$ 220	\$ 39,600
24" RCP Storm Sewer	Residential Street	5 - 8	330	Foot	\$ 265	\$ 87,450
5' Diameter Manhole	Residential Street	0 - 5	2	Each	\$ 5,000	\$ 10,000
5' Diameter Manhole	Residential Street	5 - 8	3	Each	\$ 5,750	\$ 17,250
Inlet	Residential Street	0 - 5	2	Each	\$ 1,000	\$ 2,000
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Location Construction Subtotal=						\$ 181,300

Area 1-5

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
24" RCP Storm Sewer	Residential Street	0 - 5	240	Foot	\$ 250	\$ 60,000
36" RCP Storm Sewer	Residential Street	5 - 8	330	Foot	\$ 330	\$ 108,900
48" RCP Storm Sewer	Residential Street	8 - 12	480	Foot	\$ 480	\$ 230,400
5' Diameter Manhole	Residential Street	8 -12	2	Each	\$ 6,500	\$ 13,000
7' Diameter Manhole	Residential Street	5 - 8	2	Each	\$ 8,250	\$ 16,500
8' Diameter Manhole	Residential Street	5 - 8	4	Each	\$ 9,500	\$ 38,000
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000

Location Construction Subtotal= \$ 491,800

Construction Subtotal \$ 1,561,095

Construction Contingency 20% \$ 312,219

Construction Total \$ 1,873,314

Design Engineering 7.5% \$ 140,499

Construction Observation 7.5% \$ 140,499

Project Total \$ 2,154,311

Notes

1. Prices include sanitary sewer and water service relocation/adjustment, trench backfill, pavement or lawn restoration, traffic control, erosion control, construction layout, mobilization and permitting.
2. Prices do not include right-of-way acquisition, temporary or permanent easements, or relocating other utilities.
3. Prices are current for 2012.



City of Wood Dale

Appendix 3 - Engineer's Opinion of Probable Construction Cost
Proposed Improvements for Area 1 - Alternate 3

Area 1-2

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
30" RCP Storm Sewer	Side Yard	5 - 8	190	Foot	\$ 295	\$ 56,050
24" RCP Storm Sewer	Residential Street	0 - 5	450	Foot	\$ 220	\$ 99,000
5' Diameter Manhole	Residential Street	0 - 5	3	Each	\$ 5,000	\$ 15,000
6' Diameter Manhole	Residential Street	0 - 5	1	Each	\$ 6,000	\$ 6,000
6' Diameter Manhole	Side Yard	5 - 8	1	Each	\$ 7,000	\$ 7,000
High Capacity Inlets	Residential Street	N/A	2	Each	\$ 3,250	\$ 6,500
30" FES	Side Yard	0 - 5	1	Each	\$ 1,980	\$ 1,980
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Location Construction Subtotal=						\$ 216,530

Area 1-3

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
18" RCP Storm Sewer	Residential Street	0 - 5	105	Foot	\$ 220	\$ 23,100
Inlets	Residential Street	N/A	2	Each	\$ 1,000	\$ 2,000
Remove 44"x66" CMP	N/A	N/A	105	Foot	\$ 250	\$ 26,250
Dredge Channel	N/A	N/A	74.1	CY	\$ 30	\$ 2,222
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Location Construction Subtotal=						\$ 78,572

Area 1-4

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
36" RCP Storm Sewer	Residential Street	5 - 8	640	Foot	\$ 330	\$ 211,200
36" RCP Storm Sewer	Residential Street	8 - 12	1245	Foot	\$ 370	\$ 460,650
36" RCP Storm Sewer	Side Yard	8 - 12	1545	Foot	\$ 340	\$ 525,300
42" RCP Storm Sewer	Residential Street	5 - 8	240	Foot	\$ 375	\$ 90,000
48" RCP Storm Sewer	Residential Street	5 - 8	410	Foot	\$ 430	\$ 176,300
7' Diameter Manhole	Residential Street	5 - 8	7	Each	\$ 8,250	\$ 57,750
7' Diameter Manhole	Residential Street	8 - 12	10	Each	\$ 9,500	\$ 95,000
8' Diameter Manhole	Residential Street	5 - 8	4	Each	\$ 9,500	\$ 38,000
Directional Boring	Side Yard	8 - 12	145	Foot	\$ 2,000	\$ 290,000
Connect to Existing	N/A	N/A	2	Lump Sum	\$ 25,000	\$ 50,000
Location Construction Subtotal=						\$ 1,994,200

Area 1-5

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
24" RCP Storm Sewer	Residential Street	0 - 5	175	Foot	\$ 240	\$ 42,000
24" RCP Storm Sewer	Residential Street	5 - 8	45	Foot	\$ 265	\$ 11,925
42" RCP Storm Sewer	Residential Street	5 - 8	30	Foot	\$ 375	\$ 11,250
42" RCP Storm Sewer	Residential Street	8 -12	390	Foot	\$ 420	\$ 163,800
5' manhole	Residential Street	8 -12	2	Each	\$ 6,500	\$ 13,000
7' manhole	Residential Street	5 - 8	2	Each	\$ 8,250	\$ 16,500
8' manhole	Residential Street	5 - 8	1	Each	\$ 9,500	\$ 9,500
8' manhole	Residential Street	8 -12	2	Each	\$ 11,000	\$ 22,000
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000

Location Construction Subtotal= \$ 314,975

Construction Subtotal		\$ 2,604,277
Construction Contingency	20%	\$ 520,855
Construction Total		\$ 3,125,133
Design Engineering	7.5%	\$ 234,385
Construction Observation	7.5%	\$ 234,385

Project Total **\$ 3,593,903**

Notes

1. Prices include sanitary sewer and water service relocation/adjustment, trench backfill, pavement or lawn restoration, traffic control, erosion control, construction layout, mobilization and permitting.
2. Prices do not include right-of-way acquisition, temporary or permanent easements, or relocating other utilities.
3. Prices are current for 2012.



City of Wood Dale

Appendix 4 - Engineer's Opinion of Probable Construction Cost
Proposed Improvements for Area 5 - Alternate 1

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
12" RCP Storm Sewer	Residential Street	0 - 5	255	Foot	\$ 200	\$ 51,000
18" RCP Storm Sewer	Residential Street	0 - 5	165	Foot	\$ 225	\$ 37,125
4' Diameter Manhole	Residential Street	0- 5	3	Each	\$ 4,000	\$ 12,000
Inlet	N/A	N/A	16	Each	\$ 1,000	\$ 16,000
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000

Construction Subtotal		\$ 141,125
Construction Contingency	20%	\$ 28,225
Construction Total		\$ 169,350
Design Engineering	7.5%	\$ 12,701
Construction Observation	7.5%	\$ 12,701
Project Total		\$ 194,753

Notes

1. Prices include sanitary sewer and water service relocation/adjustment, trench backfill, pavement or lawn restoration, traffic control, erosion control, construction layout, mobilization and permitting.
2. Prices do not include right-of-way acquisition, temporary or permanent easements, or relocating other utilities.
3. Prices are current for 2012.



City of Wood Dale

Appendix 5 - Engineer's Opinion of Probable Construction Cost
Proposed Improvements for Area 5 - Alternate 2

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
12" RCP Storm Sewer	Residential Street	0 - 5	90	Foot	\$ 200	\$ 18,000
18" RCP Storm Sewer	Side Yard	0 - 5	163	Foot	\$ 200	\$ 32,600
18" RCP Storm Sewer	Residential Street	0 - 5	490	Foot	\$ 220	\$ 107,800
24" RCP Storm Sewer	Residential Street	0 - 5	480	Foot	\$ 240	\$ 115,200
24" RCP Storm Sewer	Residential Street	5 - 8	765	Foot	\$ 265	\$ 202,725
4' Diameter Manhole	Residential Street	0 - 5	1	Each	\$ 4,000	\$ 4,000
5' Diameter Manhole	Residential Street	0 - 5	10	Each	\$ 5,000	\$ 50,000
5' Diameter Manhole	Residential Street	5 - 8	4	Each	\$ 5,750	\$ 23,000
Inlet	N/A	N/A	27	Each	\$ 1,000	\$ 27,000
High Capacity Inlet	N/A	0 - 5	4	Each	\$ 3,250	\$ 13,000
24" FES	Back Yard	N/A	2	Each	\$ 1,898	\$ 3,796
18" FES	Side Yard	N/A	2	Each	\$ 1,650	\$ 3,300
Lower Pond Outlet	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 25,000	\$ 25,000

Construction Subtotal		\$ 650,421
Construction Contingency	20%	\$ 130,084
Construction Total		\$ 780,505
Design Engineering	7.5%	\$ 58,538
Construction Observation	7.5%	\$ 58,538
Project Total		\$ 897,581

Notes

- Prices include sanitary sewer and water service relocation/adjustment, trench backfill, pavement or lawn restoration, traffic control, erosion control, construction layout, mobilization and permitting.
- Prices do not include right-of-way acquisition, temporary or permanent easements, or relocating other utilities.
- Prices are current for 2012.



City of Wood Dale

Appendix 6 - Engineer's Opinion of Probable Construction Cost
Proposed Improvements for Area 6 - Alternate 1

Item	Location Type	Depth, feet	Quantity	Unit	Unit Price	Item Cost
12" RCP Storm Sewer	Residential Street	0 - 5	87	Foot	\$ 275	\$ 23,925
18" RCP Storm Sewer	Downtown Street	0 - 5	110	Foot	\$ 295	\$ 32,450
24" RCP Storm Sewer	Downtown Street	0 - 5	97	Foot	\$ 320	\$ 31,040
24" RCP Storm Sewer	Downtown Street	5 - 8	577	Foot	\$ 350	\$ 201,950
27" RCP Storm Sewer	Downtown Street	5 - 8	185	Foot	\$ 385	\$ 71,225
30" RCP Storm Sewer	Downtown Street	0 - 5	522	Foot	\$ 350	\$ 182,700
30" RCP Storm Sewer	Downtown Street	5 - 8	364	Foot	\$ 385	\$ 140,140
36" RCP Storm Sewer	Downtown Street	5 - 8	377	Foot	\$ 425	\$ 160,225
42" RCP Storm Sewer	Downtown Street	5 - 8	411	Foot	\$ 475	\$ 195,225
48" RCP Storm Sewer	Downtown Street	5 - 8	2052	Foot	\$ 535	\$ 1,097,820
5' Diameter Manhole	Downtown Street	0 - 5	4	Each	\$ 6,250	\$ 25,000
5' Diameter Manhole	Downtown Street	5 - 8	8	Each	\$ 7,000	\$ 56,000
6' Diameter Manhole	Downtown Street	0 - 5	4	Each	\$ 7,500	\$ 30,000
6' Diameter Manhole	Downtown Street	5 - 8	1	Each	\$ 8,500	\$ 8,500
7' Diameter Manhole	Downtown Street	5 - 8	3	Each	\$ 9,750	\$ 29,250
8' Diameter Manhole	Downtown Street	5 - 8	6	Each	\$ 11,500	\$ 69,000
Inlet	N/A	N/A	77	Each	\$ 1,250	\$ 96,250
Connect to Existing	N/A	N/A	1	Lump Sum	\$ 10,000	\$ 10,000

Construction Subtotal		\$ 2,460,700
Construction Contingency	20%	\$ 492,140
Construction Total		\$ 2,952,840
Design Engineering	7.5%	\$ 221,463
Construction Observation	7.5%	\$ 221,463
Project Total		\$ 3,395,766

Notes

1. Prices include sanitary sewer and water service relocation/adjustment, trench backfill, pavement or lawn restoration, traffic control, erosion control, construction layout, mobilization and permitting.
2. Prices do not include right-of-way acquisition, temporary or permanent easements, or relocating other
3. Prices are current for 2012.