

## **Chapter 3A**

### **South St. Joseph Creek Watershed**

**WATERSHED INFRASTRUCTURE IMPROVEMENT PLAN  
CHAPTER 3A  
ST. JOSEPH CREEK SOUTH WATERSHED  
VILLAGE OF DOWNERS GROVE  
DUPAGE COUNTY**

**Prepared For**

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## **1.0 INTRODUCTION**

### **1.1 BACKGROUND AND PURPOSE**

On October 2, 2006, the Village of Downers Grove experienced a significant rain event which produced 3.77 inches of rain during a one hour period. This rain event was similar to the rainfall depth for the one hour for 100 year storm event. The impact of this storm extended to home and garage flooding, yard and street flooding, widespread power outages, and ponding of water.

Due to this storm and historical flooding, the Village of Downers Grove initiated the development of a stormwater infrastructure improvement plan. This report and associated appendices summarize the results of the Village of Downers Grove Stormwater Infrastructure Improvement Plan (Stormwater Improvement Plan) for the South St. Joseph Creek Watershed. The purpose of the Stormwater Improvement Plan in the South St. Joseph Creek Watershed is to provide the following planning level services:

- determine the 100-year and 10-year Base Flood Elevations (BFEs) of the depressional surface water storage areas (depressional areas) within the South St. Joseph Creek Watershed;
- identify problem drainage areas;
- assess the cause of some of the more severe problem drainage areas;
- recommend adequate stormwater systems through improved infrastructure and conveyance;
- recommend future stormwater projects and implementation procedures to mitigate flooding problems.

### **1.2 LIMITATIONS OF STUDY**

This study was performed on a planning level scale and did not include the following:

- hydrologic or hydraulic analysis of St. Joseph Creek or its tributaries, including steady flow modeling, or unsteady FEQ analysis;
- detailed survey of all stormwater systems and facilities;
- wetland field verification or delineation;
- design or construction plans or specifications;
- permitting documents.

Additional notes on study limitations and assumptions are provided as necessary in the report and associated appendices.

## **2.0 PROBLEM AREA IDENTIFICATION**

### **2.1 PROBLEM AREA IDENTIFICATION METHODOLOGY**

#### **2.1.1 Data Sources Reviewed**

The following data sources were reviewed to determine flooding locations, severity, and frequency of drainage problems within the St. Joseph Creek South Watershed:

- Drainage problem master list provided by the Village
- 2005 Village questionnaires in GIS format.
- October 2, 2006 storm complaints in GIS format.
- Resident feedback from workshop meeting in April 2007.
- Field visits performed by Engineering Resource Associates, Inc. (ERA) in 2007.
- 1996 list of flood complaints provided by the Village

#### **2.1.2 Prioritization Method for Drainage Problems and Problem Areas**

A prioritization method was developed to better categorize the numerous flooding complaints received throughout the Village in the past several years. The following sections are brief descriptions how flood reports were categorized.

##### **2.1.2.1 Critical Problems**

**Critical Problems:** problems that result in structural damage (including any flooding of the first floor of a primary structure, basement flooding of more than 6 inches that resulted from overland flow through a window or door, or garage flooding of more than 7 inches.) Problems that cause disruption of major traffic routes were also classified as critical.

##### **2.1.2.2 Chronic Problems**

**Chronic Problems:** problems that are less severe than critical and do not result in costly damage or repairs, including shallow street flooding, disruption of minor traffic routes, basement flooding of less than 6 inches resulting from overland flow, garage flooding of less than 7 inches, or yard flooding of more than 12 inches (that is not also associated with structural flooding).

### 2.1.2.3 Nuisance Problems

Nuisance Problems: minor, isolated problems that are less severe than chronic and do not generally result in damage or require repair, or are not caused by surface flooding/drainage problems. Nuisance problems include yard flooding of less than 12 inches; basement flooding resulting from foundation cracks, sump pump failure, seepage or other non-overland causes; or other minor, isolated problems.

## **2.2 PROBLEM AREAS IN ST. JOSEPH CREEK SOUTH WATERSHED**

### **2.2.1 Description of Watershed**

St. Joseph Creek South Watershed is approximately located south of Maple Avenue, north of 63<sup>rd</sup> Street, east of Springside Avenue, and west of Williams Street. The watershed is approximately 1.6 square miles or 1000 acres in size. St. Joseph Creek South Watershed consists mainly of residential areas with the exception of a few parks, schools, churches, and an industrial and commercial area adjacent to 2<sup>nd</sup> Street in the Fairview business area. The topography of the watershed is typical of DuPage County and varies from flat poorly drained areas to rolling hills with significant flow paths.

The western portion of the watershed drains to the South Branch of St. Joseph Creek. The headwater of the South Branch begins just east of the intersection of Dunham Road and 61<sup>st</sup> Street in the rear yards of properties on Dunham Road. The creek proceeds in a northeastern direction where it flows under 59<sup>th</sup> Street and turns east to Carpenter Street. This stretch of the South Branch is extremely flat with a channel slope of approximately 0.25%. As the Creek proceeds under Carpenter Street it turns north flowing under residential driveways on the east side of Carpenter Street. The South Branch again turns to the northeast where it flows at approximately 1.5% slope under Main, Webster, and Washington Streets. At Washington Street the creek turns towards the east where it passes under Lyman and Fairmount Avenues discharging into Barth Pond located at Patriots Park. At Barth Pond, St. Joseph Creek South Branch converges with the Main Stem.

The eastern portion of the watershed drains to the Main Stem of St. Joseph Creek. St. Joseph Creek enters the Village of Downers Grove from the east just downstream of the King Arthur Court apartment complex detention system at Cumnor and 56<sup>th</sup> Street. The creek continues west under Fairview Avenue where it enters Barth Pond and combines with flows from the South Branch. St. Joseph Creek outlets Barth Pond at the northeast corner of Grand Avenue and 55<sup>th</sup> Street and proceeds north. The Creek flows adjacent to Grand Avenue before entering a long conduit at Hill Street that passes under an elementary school and parking lot, which exits on the east side of Blodgett

Avenue. Main Stem St. Joseph Creek enters another conduit at Blodgett Avenue that exits the Subwatershed on the north side of Maple Avenue.

## **2.2.2 Description of Typical Drainage Problems**

Problem Area locations are shown on the St. Joseph Creek South Branch Watershed Map in Section 2.2.3 of Chapter 3A. Flooding reports suggest seven critical problems, nineteen chronic problems and many nuisance problems.

Two major critical problems are both located in the Fairview business area. The first is located at the intersection of 2<sup>nd</sup> Street and Cumnor Road. At this location the topography of the area is a bowl shape with no overland flow path. The only relief is an existing 27-inch stormsewer that conveys stormwater approximately 2500-feet west to St. Joseph Creek. The existing system begins to surcharge during storm events as small as the 6-month event. Stormwater ponds approximately 4-feet during the 100-year storm event flooding and blocking access to several homes. The second major critical problem is located north of 55<sup>th</sup> Street, south of 7<sup>th</sup> Street, between Cumnor Road and Victor Street. The topography in this area also creates a bowl shape and the only outlet is an 18-inch sewer. The 18-inch line conveys stormwater south to a 36-inch pipe which outlets to St. Joseph Creek at Cumnor Road and 56<sup>th</sup> Street. The floodplain elevation of St. Joseph Creek extends through these stormsewers and encroaches upon the properties at this critical problem area. The backwater of the Creek surcharges the system and floods residential basements over 7.0-feet and floods first floor elevations. This flooding also blocks emergency access to homes.

Less severe flooding includes structural, basement, roadway, yard, septic, and garage flooding. Many of the problems are due to lack of stormsewer capacity as well as floodplain elevations of St. Joseph Creek and the South Branch of St. Joseph Creek. Many problems are intensified by lack of maintenance of stormsewers, drainage ditches, and creeks.

The watershed contains 24 depressional storage areas that were identified by the Village of Downers Grove.

A description of each problem area is provided in Table 2.1.

## **2.2.3 Map Showing Problem Areas**

St. Joseph Creek South Watershed Map follows.

## **2.2.4 Existing Problem Areas in St. Joseph Creek South Watershed**

Table 2.1 follows.

Table 2.1 Problem Areas in the St. Josephs Creek South Watershed

Problem Area ID	Sub-watershed ID	Location	Problem Description						Severity*	Description/Comments
			House	Base-ment	Garage	Yard	Street	Depr. Area		
		Intersection/General location description							Critical, Chronic or Nuisance	
SJS-44	SJS-A	Hillcrest between George and Jefferson		x		x	x	x	Chronic	Depression Area
SJS-400	SJS-A	North of 61st between Ridgewood and Dunham		x		x			Chronic	Due to Floodplain
SJS-57	SJS-A	East 61st and Dunham	x	x		x		x	Critical	Depression Area
SJS-401	SJS-A	59th West of Brookbank		x		x			Chronic	Due to Floodplain
SJS-64	SJS-A	SW of Brookbank and 60th		x		x		x	Chronic	Depression Area
SJS-402	SJS-A	60th and Carpenter		x		x			Chronic	
SJS-58	SJS-B	NW of Jefferson and Middaugh		x		x		x	Nuisance	Depression Area
SJS-403	SJS-B	Brookbank and Jefferson	x	x		x	x		Critical	Due to Floodplain
SJS-404	SJS-B	Carpenter between 59 and blanchard				x			Nuisance	Due to Floodplain
SJS-405	SJS-B	NW of Main St and 59th				x			Nuisance	
SJS-85/89	SJS-C	E. of Main between 55th and Kenyon		x		x		x	Nuisance	Depression Area
SJS-95/187/102	SJS-C	N. of Kenyon between Washigton and Fairmount		x		x	x	x	Chronic	Depression Area
SJS-408	SJS-C	Kenyon and Washigton	x	x	x	x	x		Critical	Due to Floodplain
SJS-409	SJS-C	Fairmount E. of Kenyon and Lyman		x		x			Chronic	Due to Floodplain
SJS-407	SJS-C	Webster between kenyon and Blanchard				x	x		Chronic	Due to Floodplain
SJS-406	SJS-C	Washington between Blanchard and 59th				x			Nuisance	Resident Complaint at April Workshop
SJS-88	SJS-C	Webster between Blanchard and 59th			x	x			Nuisance	Depression Area
SJS-87	SJS-D	Northwest of 55th and Webster				x			Nuisance	Depression Area
SJS-91	SJS-D	Southwest of Washington and Summit		x		x			Nuisance	Depression Area
SJS-114	SJS-D	East of Summit and Blodgett				x			Nuisance	Depression Area
SJS-410	SJS-E	57th and Wanda		x					Nuisance	Steep Slopes Down to Street
SJS-115	SJS-F	W. of Bunning and Grand		x			x		Chronic	Depression Area
SJS-116	SJS-F	SW. of 59th and Grand				x			Nuisance	No Outlet
SJS-411	SJS-F	Grand and 60th		x	x		x		Chronic	Downstream SS Reduces in Size
SJS-412	SJS-F	Osage between 60th and 61st				x	x		Chronic	Downstream SS Reduces in Size
SJS-413	SJS-G	3rd between Florence and Fairview		x			x		Chronic	Low Area
SJS-184	SJS-G	S. of 6th between Fairview and Florence		x		x	x		Chronic	Depression Area
SJS-414	SJS-G	8th between Florance and Fairview		x					Nuisance	Low Area
SJS-415	SJS-H	Wilcox and 55th Pl.				x	x		Chronic	Due to Floodplain
SJS-416	SJS-H	SW. of 56th and Deerpath		x		x			Chronic	Detention Facility Overtops
SJS-417	SJS-H	56th between Deerpath and Cumnor	x	x		x			Critical	Due to Floodplain
SJS-418	SJS-H	Harmarc and White Fawn		x		x			Chronic	Due to Floodplain
SJS-419	SJS-I	6th and Cumnor					x		Chronic	
SJS-124	SJS-I	8th between Cumnor and Florence				x	x	x	Chronic	Depression Area
SJS-125	SJS-I	N. of 55th between Cumnor and Victor	x	x	x	x	x	x	Critical	Floodplain Backs Up Thru Sewer
SJS-420	SJS-I	Williams and 8th				x			Nuisance	Lack of SS
SJS-118	SJS-J	Fairview between 3rd and Burlington					x	x	Critical	
SJS-121/123	SJS-J	2nd and Cumnor	x	x	x	x	x	x	Critical	Large Bowl Area
SJS-128	SJS-J	Willams Between Richmond and 6th		x		x		x	Chronic	

## **3.0 HYDROLOGIC AND HYDRAULIC METHODS**

### **3.1 INTRODUCTION**

The main hydrologic/hydraulic model used to analyze stormwater conveyance systems was the XPSWMM model. TR-20 modeling was used for the simple depressional areas. Both methods utilized SCS methodology. The analysis of the existing St. Joseph Creek South Watershed and the proposed improvements was performed at a planning level of detail using many assumptions and therefore should be refined in preliminary and final design.

### **3.2 HYDROLOGIC METHODS**

Event hydrograph hydrologic computer programs were used to model hydrology. Complex drainage systems were modeled using the XPSWMM dynamic modeling software. When XPSWMM was used, the SCS method was selected for modeling runoff hydrology. For simpler drainage systems that did not require the complexity of an XPSWMM model, TR-20 software was used which also uses the SCS computation method.

The SCS method requires drainage area, runoff curve number, time of concentration, rainfall depth, and rainfall distribution as major inputs. Drainage areas were delineated using DuPage County's 2-foot topographic mapping as provided by the Village of Downers Grove. Runoff curve numbers were computed using typical SCS methodology. These curve numbers were based on the land use shown on the Village of Downers Grove Zoning Map. Times of concentration were determined using SCS methodology. Flow paths were delineated using the 2-ft topography with a maximum sheet flow length of 100 feet. Rainfall depths were obtained from Table 1 of Circular 172: Frequency Distributions of Heavy Rainstorms in Illinois by Floyd A. Huff and James R. Angel, 1989. Rainfall distributions were obtained from Circular 173: Time Distribution of Heavy Rainstorms in Illinois by Floyd A. Huff, 1990.

The hydrologic models often include storage areas. Stage-storage relationships for these storage areas were developed based on the DuPage County two-foot topographic mapping. Volume was computed using XPSWMM methodologies or the average-end-area method. The outlet characteristics of storage basins were based on field survey. If an outlet could not be found for depressional areas, 2-foot topographic mapping or field survey of the apparent overflow location was used in the modeling.

Hydrologic methods were used to establish flood elevation of depressional areas that were identified by the Village. All depressional areas in the St.

Joseph Creek South Watershed were modeled to determine the 10- and 100-year floodplain elevations.

### **3.3 HYDRAULIC METHODS**

Major drainage systems within the St. Joseph Creek South Branch were modeled using the XPSWMM dynamic modeling software. FEQ modeling was not performed as part of this study but may need to be performed during preliminary and final engineering to meet DuPage County regulatory criteria.

Hydraulic input parameters include storm sewer characteristics such as length, slope, pipe roughness, and pipe diameter; and open channel characteristics such as channel shape, channel roughness, and channel slope. The majority of the information used was obtained from a field survey provided by the Village of Downers Grove, while the remainder of the information was obtained from a survey prepared by ERA. Channel cross-sections were scaled from DuPage County 2-foot topographic mapping.

The hydraulic models developed for this study were not intended to represent every pipe segment and every storm sewer structure, but rather to provide general characterizations of the system and identify areas with deficient conveyance. The hydraulic models often represented multiple pipe segments as a single segment, and often combined stormwater runoff inflow from several locations into a single inflow point.

### **3.4 CALIBRATION METHODS**

Model calibration was performed to compare model flood elevations against actual flooding experienced on October 2, 2006. The October 2, 2006 storm event was modeled using rain gage information as measured by the Downers Grove Sanitary District. The model results were compared to flood records and testimony to determine whether the models simulated realistic flooding.

## **4.0 EXISTING CONDITIONS ANALYSIS**

### **4.1 INTRODUCTION**

The results of the existing condition analysis are summarized in this section of the report. Refer to Appendix A of Chapter 3A for detailed descriptions of the existing problems and additional documentation to support the analysis and calculations.

### **4.2 ST. JOSEPH CREEK SOUTH WATERSHED**

Table 4.1 summarizes the results of the existing condition analysis for problem areas in the St. Joseph Creek South Watershed. Table 4.2 shows base flood elevations for depressional storage areas identified by the Village.

#### **4.2.1 Existing Condition Problem Area Results in St. Joseph Creek South Watershed**

Table 4.1 follows.

Table 4.1 Existing Condition Problem Area Results in St. Josephs Creek South Watershed

Problem Area ID	Sub-watershed ID	Location	Problem Description					Severity*	Problem Source	
			House	Base-ment	Garage	Yard	Street			Depr. Area
		Intersection/General location description							Critical, Chronic or Nuisance	
SJS-44	SJS-A	Hillcrest between George and Jefferson		x		x	x	x	Chronic	Undersized Depressional Area Outlet
SJS-400	SJS-A	North of 61st between Ridgewood and Dunham		x		x			Chronic	Floodplain Backs Up Through Storm Sewer
SJS-57	SJS-A	East 61st and Dunham	x	x		x		x	Critical	No Outlet of Depressional Area
SJS-401	SJS-A	59th West of Brookbank		x		x			Chronic	Floodplain of South Branch
SJS-64	SJS-A	SW of Brookbank and 60th		x		x		x	Chronic	Undersized Depressional Area Outlet
SJS-402	SJS-A	60th and Carpenter		x		x			Chronic	Inadequate Storm Sewer
SJS-58	SJS-B	NW of Jefferson and Middaugh		x		x		x	Nuisance	Depressional Area
SJS-403	SJS-B	Brookbank and Jefferson	x	x		x	x		Critical	Floodplain of South Branch
SJS-404	SJS-B	Carpenter between 59 and blanchard				x			Nuisance	Undersized Driveway Culverts
SJS-405	SJS-B	NW of Main St and 59th				x			Nuisance	Floodplain of South Branch/59th St Storm Sewer
SJS-85/89	SJS-C	E. of Main between 55th and Kenyon		x		x		x	Nuisance	Undersized Depressional Area Outlet
SJS-95/187/102	SJS-C	N. of Kenyon between Washigton and Fairmount		x		x	x	x	Chronic	Undersized Depressional Area Outlet
SJS-408	SJS-C	Kenyon and Washignton	x	x	x	x	x		Critical	Floodplain of South Branch
SJS-409	SJS-C	Fairmount E. of Kenyon and Lyman		x		x			Chronic	Floodplain of South Branch
SJS-407	SJS-C	Webster between kenyon and Blanchard				x	x		Chronic	Floodplain of South Branch
SJS-406	SJS-C	Washington between Blanchard and 59th				x			Nuisance	Inadequate Storm Sewer
SJS-88	SJS-C	Webster between Blanchard and 59th			x	x			Nuisance	Undersized Depressional Area Outlet
SJS-87	SJS-D	Northwest of 55th and Webster				x			Nuisance	Depressional Area
SJS-91	SJS-D	Southwest of Washington and Summit		x		x			Nuisance	Depressional Area
SJS-114	SJS-D	East of Summit and Blodgett				x			Nuisance	Depressional Area
SJS-410	SJS-E	57th and Wanda		x					Nuisance	Steep Slopes From Upstream Areas and Inadequate SS Capacity
SJS-115	SJS-F	W. of Bunning and Grand		x			x		Chronic	Inadequate Storm Sewer
SJS-116	SJS-F	SW. of 59th and Grand				x			Nuisance	No Outlet of Depressional Area
SJS-411	SJS-F	Grand and 60th		x	x		x		Chronic	Inadequate Downstream Storm Sewer Capacity
SJS-412	SJS-F	Osage between 60th and 61st				x	x		Chronic	Inadequate Downstream Storm Sewer Capacity
SJS-413	SJS-G	3rd between Florence and Fairview		x			x		Chronic	Low Area And Inadequate Downstream Storm Sewer Capacity
SJS-184	SJS-G	S. of 6th between Fairview and Florence		x		x	x		Chronic	Inadequate Storm Sewer Capacity
SJS-414	SJS-G	8th between Florance and Fairview		x					Nuisance	Low Area And Inadequate Downstream Storm Sewer Capacity
SJS-415	SJS-H	Wilcox and 55th Pl.				x	x		Chronic	Floodplain from St. Josephs Creek
SJS-416	SJS-H	SW. of 56th and Deerpath		x		x			Chronic	Overflow of Deer Creek Detention Basin
SJS-417	SJS-H	56th between Deerpath and Cumnor	x	x		x			Critical	Floodplain from St. Josephs Creek
SJS-418	SJS-H	Harmarc and White Fawn		x		x			Chronic	Floodplain from St. Josephs Creek
SJS-419	SJS-I	6th and Cumnor					x		Chronic	Inadequate Storm Sewer Capacity
SJS-124	SJS-I	8th between Cumnor and Florence				x	x	x	Chronic	Undersized Depressional Area Outlet
SJS-125	SJS-I	N. of 55th between Cumnor and Victor	x	x	x	x	x	x	Critical	Floodplain from St. Josephs Creek
SJS-420	SJS-I	Williams and 8th				x			Nuisance	Lack of Storm Sewer
SJS-118	SJS-J	Fairview between 3rd and Burlington					x	x	Critical	Inadequate Storm Sewer Capacity
SJS-121/123	SJS-J	2nd and Cumnor	x	x	x	x	x	x	Critical	Inadequate Storm Sewer Capacity
SJS-128	SJS-J	Willams Between Richmond and 6th		x		x		x	Chronic	Inadequate Storm Sewer Capacity

#### **4.2.2 Depressional Area BFEs in St. Joseph Creek South Watershed**

Table 4.2 follows.

4.2 Depressional Area Elevations in St. Josephs Creek South Watershed

Problem Area ID	Location	BFE		Comments
		100-yr	10-yr	
38	Corner of Sprinside & Jefferson	750.16	748.47	TR-20
44	Southwest corner of Hillcrest Rd. & George St.	751.14	750.16	XPSWMM
51	West side of Blanchard St. and Dunham Rd. intersection	768.00	767.93	TR-20
58	Northwest corner of Middaugh Ave. & Jefferson Ave.	746.76	746.02	TR-20
57	East side of 61st St. and Dunham Rd. intersection	748.10	748.09	TR-20
64	Southwest corner of Brookbank Rd. & 60th Pl.	748.17	747.29	XPSWMM
188	Southeast corner of 59th St. and Main St.	747.60	744.76	XPSWMM
88	Northeast corner of 59th St. and Main St.	747.97	747.24	XPSWMM
89	Southwest corner of 55th St and Webster St.	736.15	734.70	XPSWMM
85	Southwest corner of 55th St and Webster St.	736.07	734.68	XPSWMM
87	Northwest corner of 55th St and Webster St.	743.28	740.94	XPSWMM
91	Southwest corner of Summit St and Washington St.	741.17	738.49	XPSWMM
187	South of 55th St in between Lyman & Washington St.	725.63	724.20	XPSWMM
95	Northeast corner of Washington St. and Kenyon St.	724.95	723.75	XPSWMM
102	Southeast of 55th St. and Lyman St.	727.00	725.67	XPSWMM
116	Southwest corner of 59th St. and Grand Ave.	756.04	756.01	TR-20
115	West of Bunning Dr. and Grand Ave.	754.60	753.43	XPSWMM
114	Southeast of Blodgett Ave. and Summit St.	718.82	718.35	TR-20
189	Southeast corner of 60th St. and Grand Ave.	751.06	751.02	TR-20
124	West of 8th St and Cuminor Rd.	724.43	723.05	XPSWMM
125	Southeast of 8th St. and Cuminor Rd.	722.38	721.50	XPSWMM
184	Northeast corner of Fairview Ave. and 7th St.	716.74	715.93	XPSWMM
118	South side of Fairview Ave. and Maple Ave.	732.30	731.26	XPSWMM
123	On Intersection of Burlington Ave. and Cuminor	728.90	727.29	XPSWMM
121	All comers of Cuminor Rd. and 2nd St.	727.43	726.54	XPSWMM
128	Southeast of Victor St. and 4th St.	750.05	748.97	XPSWMM

## **5.0 PROPOSED STORMWATER PROJECT ANALYSIS**

### **5.1 INTRODUCTION**

Proposed solutions recommended to alleviate flooding throughout the St. Joseph Creek South Watershed have been developed and modeled at a planning level of detail. XPSWMM modeling was used to evaluate the effectiveness of the solutions. Additional analysis and modeling may be required during preliminary and final engineering. The sections that follow explain design criteria used, as well as describe proposed projects and their effect on flooding problems.

### **5.2 PROPOSED CONDITIONS MODELING**

A summary of basic design criteria and assumptions used in the proposed condition modeling and analysis are presented below. Deviations from these basic criteria and assumptions are documented in Appendix A of Chapter 3A.

Stormsewers proposed to convey the 10-year storm were designed to flow full under the 10-year critical duration event with a minimum velocity of 2 feet per second. A 10-year tailwater for these systems was used as the design standard. Stormsewers proposed to convey the 100-year storm were designed to convey the critical duration 100-year flow without surcharging. Road culverts proposed to convey the 100-year storm were designed to prevent the 100-year critical duration event from overtopping the street. Storage facilities were designed to store the 100-year, 24-hour storm event. All proposed designs assumed that the downstream system has sufficient capacity. This assumption may need to be explored on a project by project basis.

### **5.3 ST. JOSEPH CREEK SOUTH WATERSHED**

#### **5.3.1 Stormwater Projects in St. Joseph Creek South Watershed**

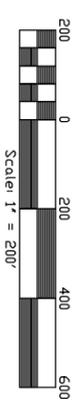
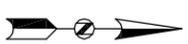
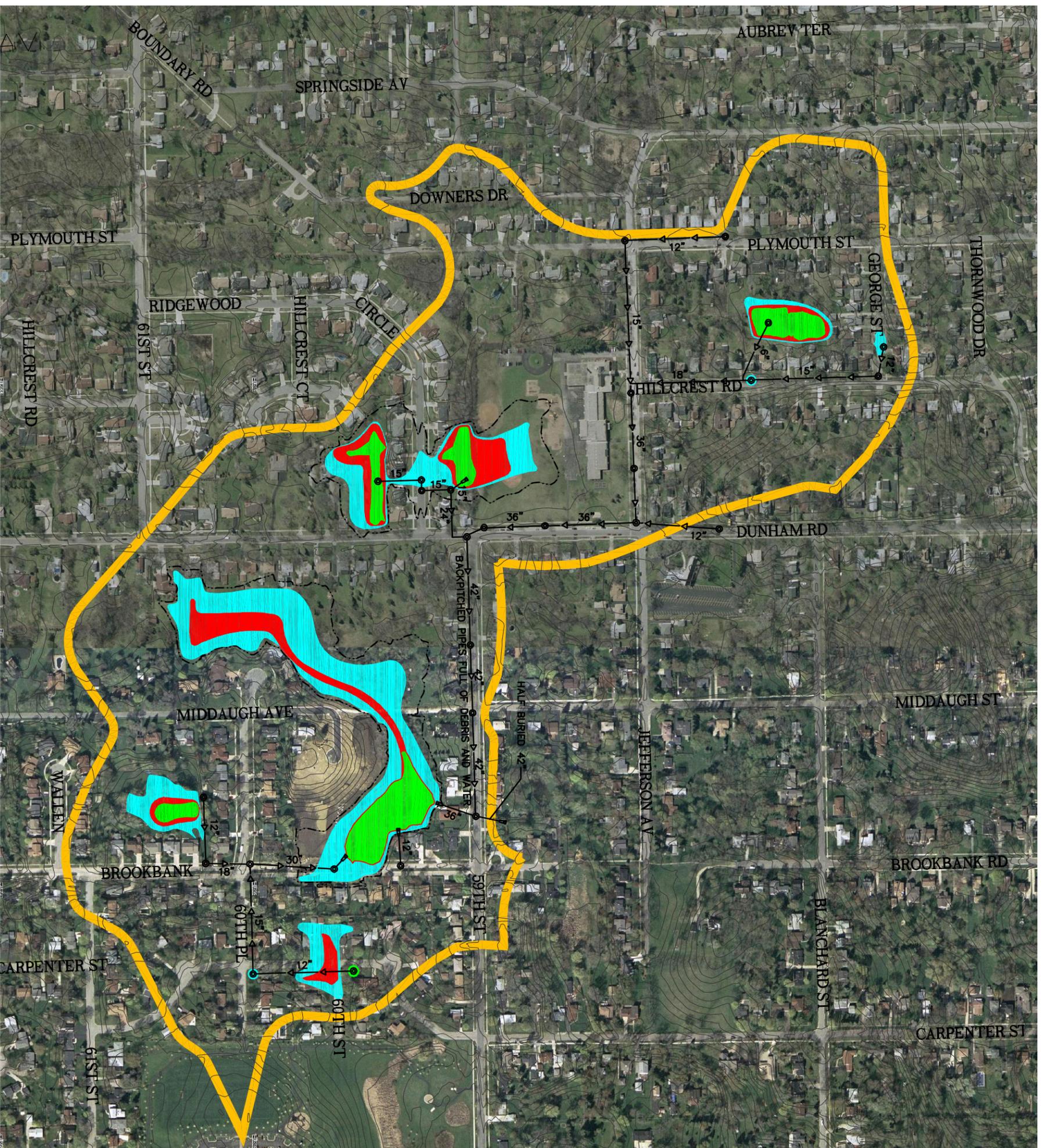
Proposed projects in the St. Joseph Creek South Watershed are shown in Table 5.1 found in Section 5.3.3.

In addition to the specific projects presented in Table 5.1, several general projects are recommended for the entire watershed. Creek and ditch maintenance is recommended for St. Joseph Creek, South Branch of St. Joseph Creek, and several ditches tributary to them. Field visits have shown that these waterways are overgrown or have extensive debris and siltation inhibiting their ability to adequately convey stormwater runoff. It is recommended that the Village establish a maintenance program to keep ditches in working order. Some creek cross-sections may have to be re-established to reduce floodplain

elevations. The extent of maintenance should be decided on a project by project basis. A routine maintenance schedule should also be developed for stormsewer systems including manholes, inlets, catchbasins, grates, and street cleaning.

General Improvement projects have been proposed for each subwatershed. These improvements include extending stormsewer to within 200-feet of every property in the Village. This will provide a positive outlet for drainage problem areas on private property, thus reducing flooding at these sites. It is also recommended that the Village consider an expansion to the current cost-sharing program to provide additional financial assistance to residents who experience significant private property flooding.

### **5.3.2 Subwatershed Exhibits**



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING
- 100-YEAR FLOODPLAIN

**PROBLEMS**

1. CHRONIC STREET FLOODING
2. CHRONIC STRUCTURAL FLOODING
3. CHRONIC YARD FLOODING
4. NUISANCE YARD FLOODING

**CAUSES**

1. FLOODPLAIN FROM ST. JOSEPH CREEK
2. DEPRESSIONAL AREAS
3. STORM SEWER CAPACITY
4. LACK OF POSITIVE SLOPES IN CHANNEL.

**PRIORITY**

**MEDIUM**

REVISIONS:	
DATE	BY

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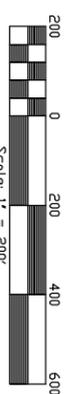
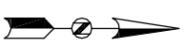
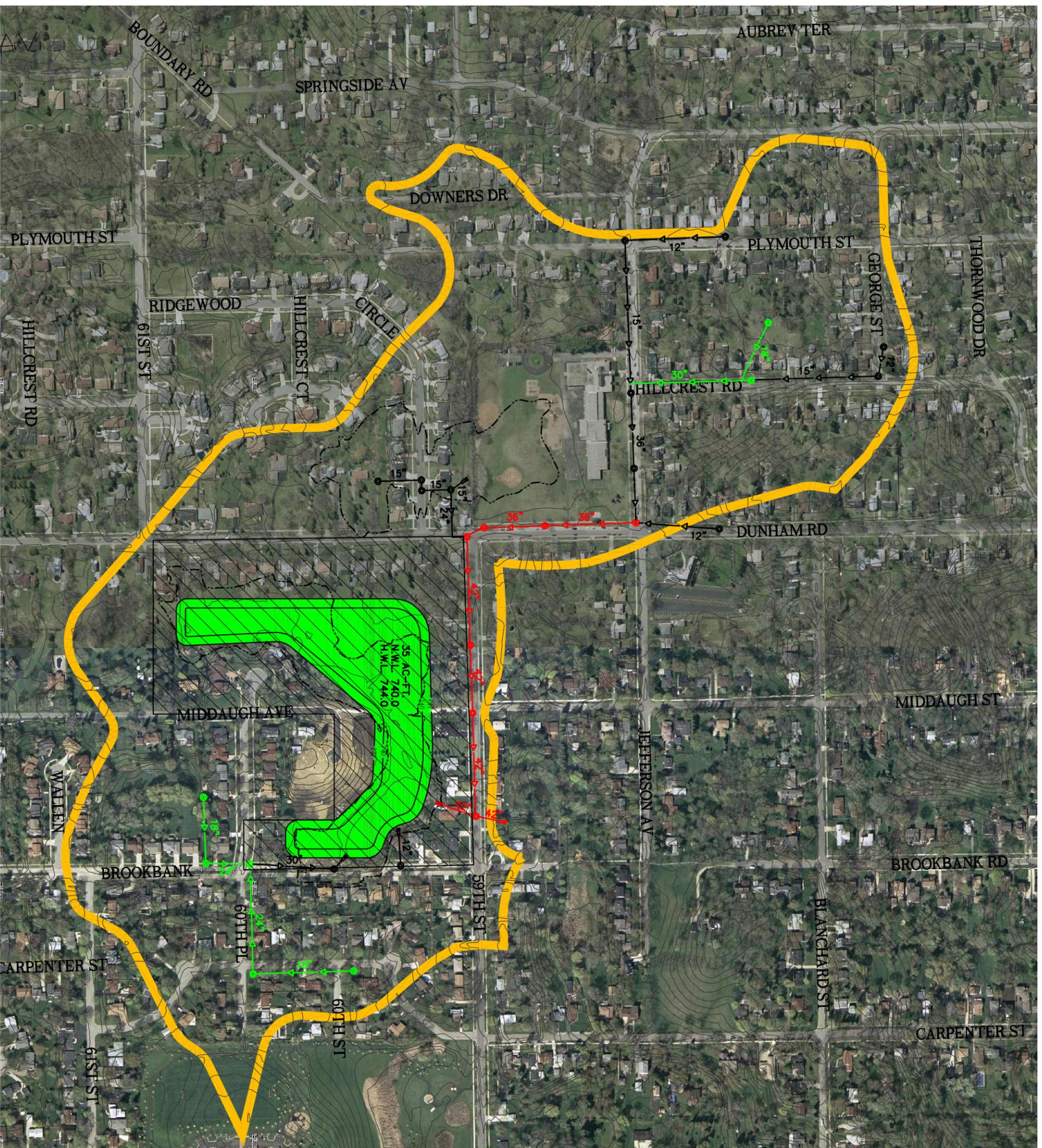
35701 WEST AVENUE, SUITE 150  
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FAX (630) 595-2152

426 SOUTH THIRD STREET  
GENEA, ILLINOIS 60134  
PHONE (630) 202-8689  
FAX (630) 202-8698

ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN

TITLE:	
EXISTING CONDITIONS SUBWATERSHED A	SHEET: 01

SCALE: 1" = 200'	
DATE: JUNE, 2007	JOB NO.: 270210



**LEGEND**

- PROPOSED 10 YEAR STORM SEWER
- PROPOSED 100 YEAR STORM SEWER
- STORAGE FACILITY
- SMALL CHANNEL MAINTENANCE
- LARGE CHANNEL MAINTENANCE
- STREAMBANK STABILIZATION
- PERMANENT EASEMENTS NEEDED
- PROPERTY BUYOUT
- 100-YEAR FLOODPLAIN

**SOLUTIONS**

1. PROVIDE 35 AC.-FT. OF STORAGE
2. ACQUIRE EASEMENTS
3. FIX BACKPITCHED STORM SEWER AND ELIMINATE STANDING WATER AND DEBRIS
4. PROVIDE 10-YEAR CAPACITY STORM SEWER
5. PROVIDE 100-YEAR CAPACITY STORM SEWER

**COST**

PROJECT COST: 20,990,000  
 GENERAL IMPROVEMENT COST: 5,880,000  
 TOTAL COST: 26,870,000

**PRIORITY**

**MEDIUM**

REVISIONS:		DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

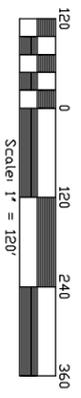
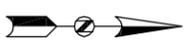
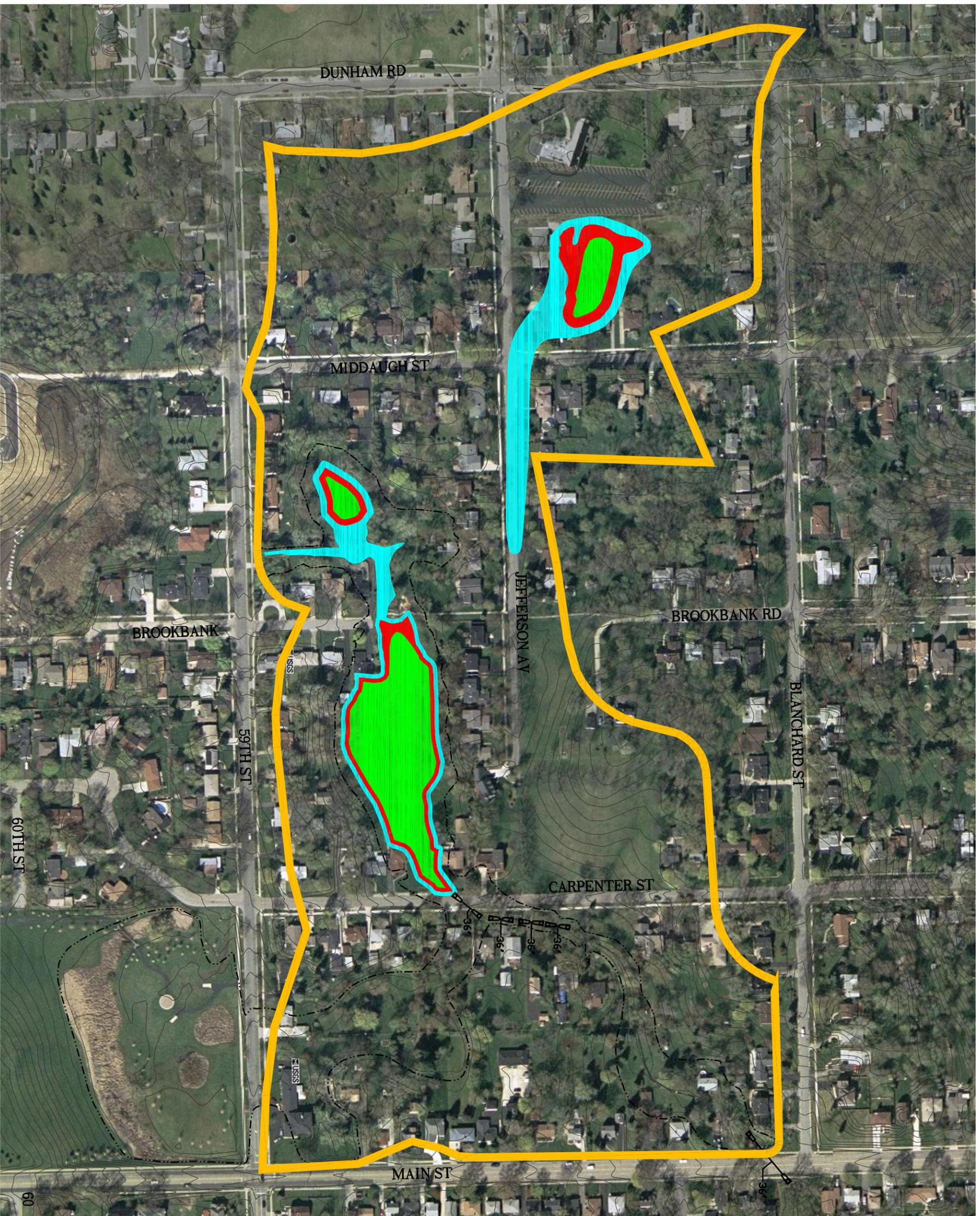
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 FAX (630) 262-8688

**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

SCALE: 1" = 200'  
 DATE: JUNE, 2007  
 JOB NO.: 270210  
 SHEET: 02



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING
- 100-YEAR FLOODPLAIN

**PROBLEMS**

1. CHRONIC STRUCTURAL FLOODING
2. CHRONIC STREET FLOODING
3. CHRONIC YARD FLOODING
4. NUISANCE YARD FLOODING

**CAUSES**

1. FLOODPLAIN FROM ST. JOSEPH CREEK
2. DEPRESSIONAL AREAS
3. LACK OF POSITIVE SLOPE IN CHANNEL

**PRIORITY**

**MEDIUM**

REVISIONS:	
DATE	BY

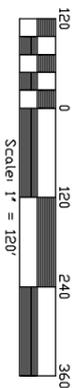
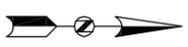
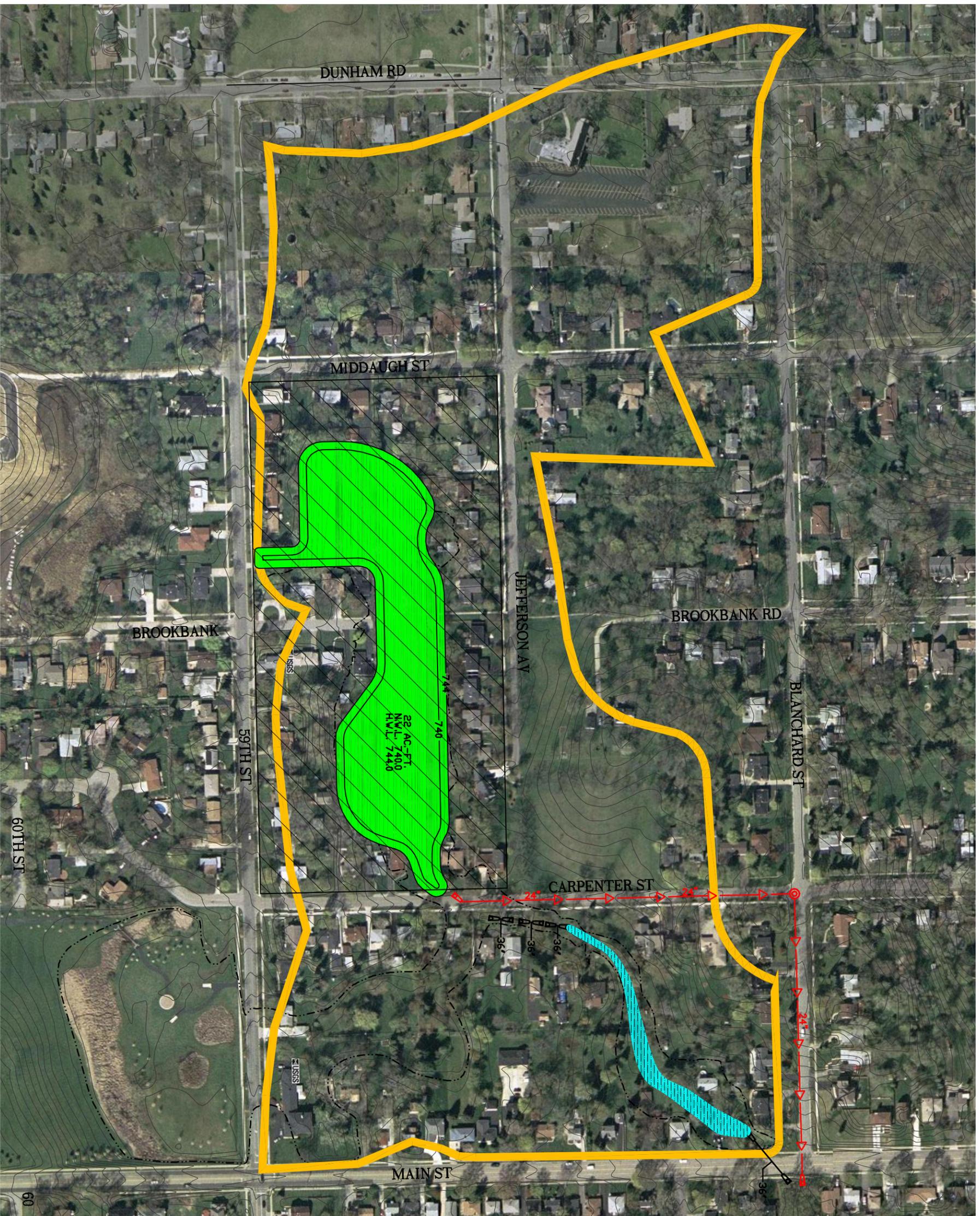
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GENEVA, ILLINOIS 60134  
PHONE (630) 262-8689  
FAX (630) 262-8688

**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

TITLE:	
EXISTING CONDITIONS	SCALE: 1" = 120'
SUBWATERSHED B	DATE: JUNE, 2007
	JOB NO.: 270210
	SHEET: 02



**LEGEND**

- ▷ PROPOSED 10 YEAR STORM SEWER
- ▷ PROPOSED 100 YEAR STORM SEWER
- STORAGE FACILITY
- SMALL CHANNEL MAINTENANCE
- LARGE CHANNEL MAINTENANCE
- STREAMBANK STABILIZATION
- PERMANENT EASEMENTS NEEDED
- PROPERTY BUYOUT
- 100-YEAR FLOODPLAIN

**SOLUTIONS**

1. ACQUIRE EASEMENTS
2. PROVIDE 22 AC-FT. OF STORAGE
3. CONSTRUCTION BYPASS STORM SEWER
4. PERFORM LARGE CHANNEL MAINTENANCE
5. PERFORM STREAMBANK STABILIZATION

**COST**

PROJECT COST: 11,770,000  
 GENERAL IMPROVEMENT COST: 2,310,000  
 TOTAL COST: 14,080,000

**PRIORITY**

**MEDIUM**

REVISIONS:	
DATE	BY

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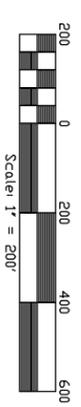
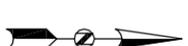
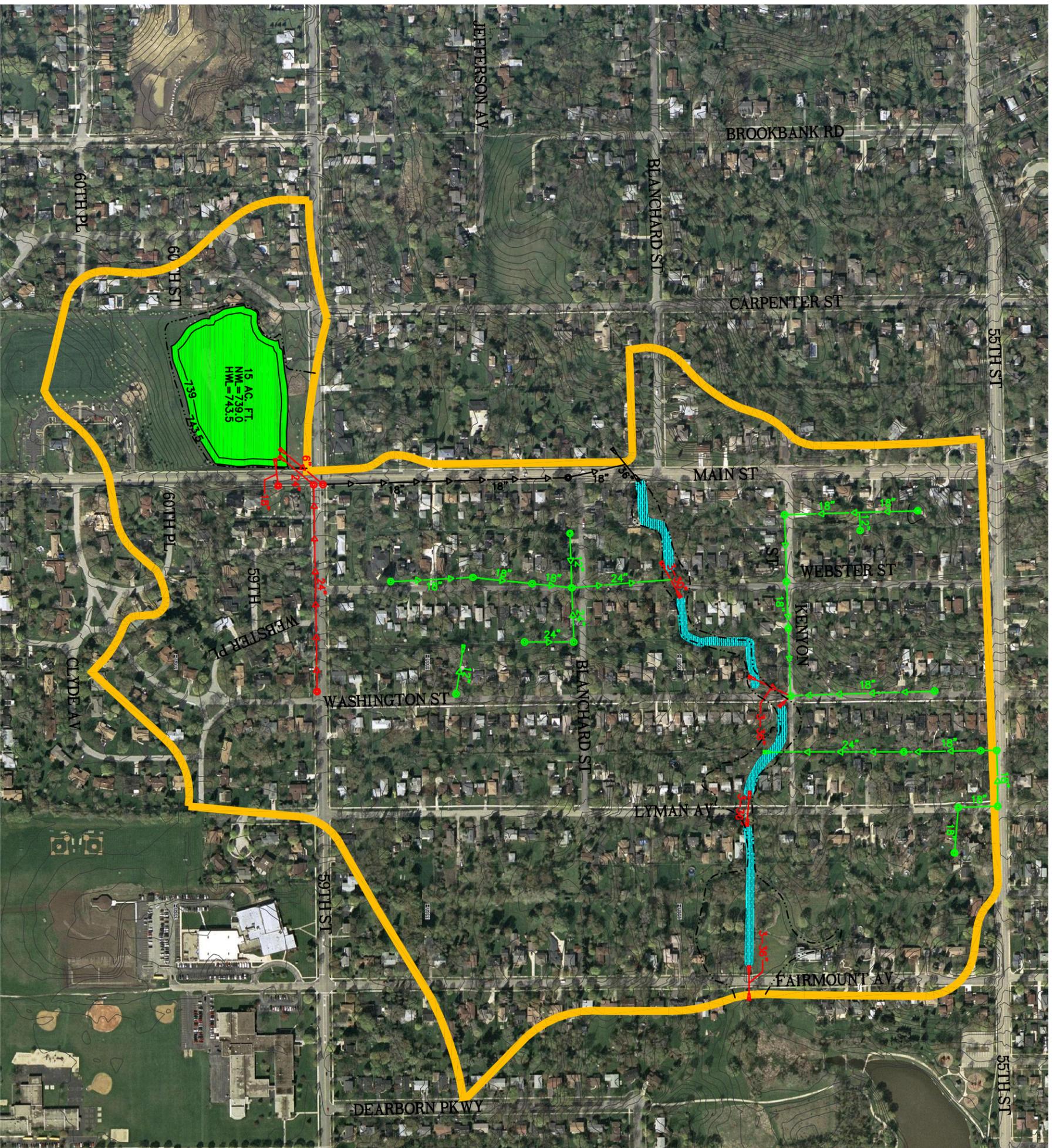
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 GENEVA, ILLINOIS 60134  
 PHONE (630) 202-8689  
 FAX (630) 202-8698

**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

TITLE:	
SCALE: 1" = 120'	DATE: JUNE, 2007
PROPOSED CONDITIONS	JOB NO.: 270210
SUBWATERSHED B	SHEET: 02





**LEGEND**

- PROPOSED 10 YEAR STORM SEWER
- PROPOSED 100 YEAR STORM SEWER
- STORAGE FACILITY
- SMALL CHANNEL MAINTENANCE
- LARGE CHANNEL MAINTENANCE
- STREAMBANK STABILIZATION
- PERMANENT EASEMENTS NEEDED
- PROPERTY BUYOUT
- 100-YEAR FLOODPLAIN

**SOLUTIONS**

1. PROVIDE 15 AC.-FT. OF STORAGE
2. REROUTE STORM SEWERS TO PROPOSED STORAGE FACILITY
3. PERFORM LARGE CHANNEL MAINTENANCE
4. PERFORM STREAMBANK STABILIZATION
5. PROVIDE 10-YEAR CAPACITY STORM SEWER
6. PROVIDE 100-YEAR CAPACITY STORM SEWER
7. REPLACE CREEK CULVERTS WITH 100-YEAR CAPACITY CULVERTS

**COST**

PROJECT COST: 8,170,000  
 GENERAL IMPROVEMENT COST: 10,660,000  
 TOTAL COST: 18,830,000

**PRIORITY**

**MEDIUM**

REVISIONS:	
DATE	BY

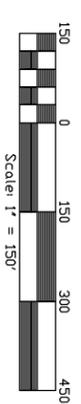
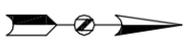
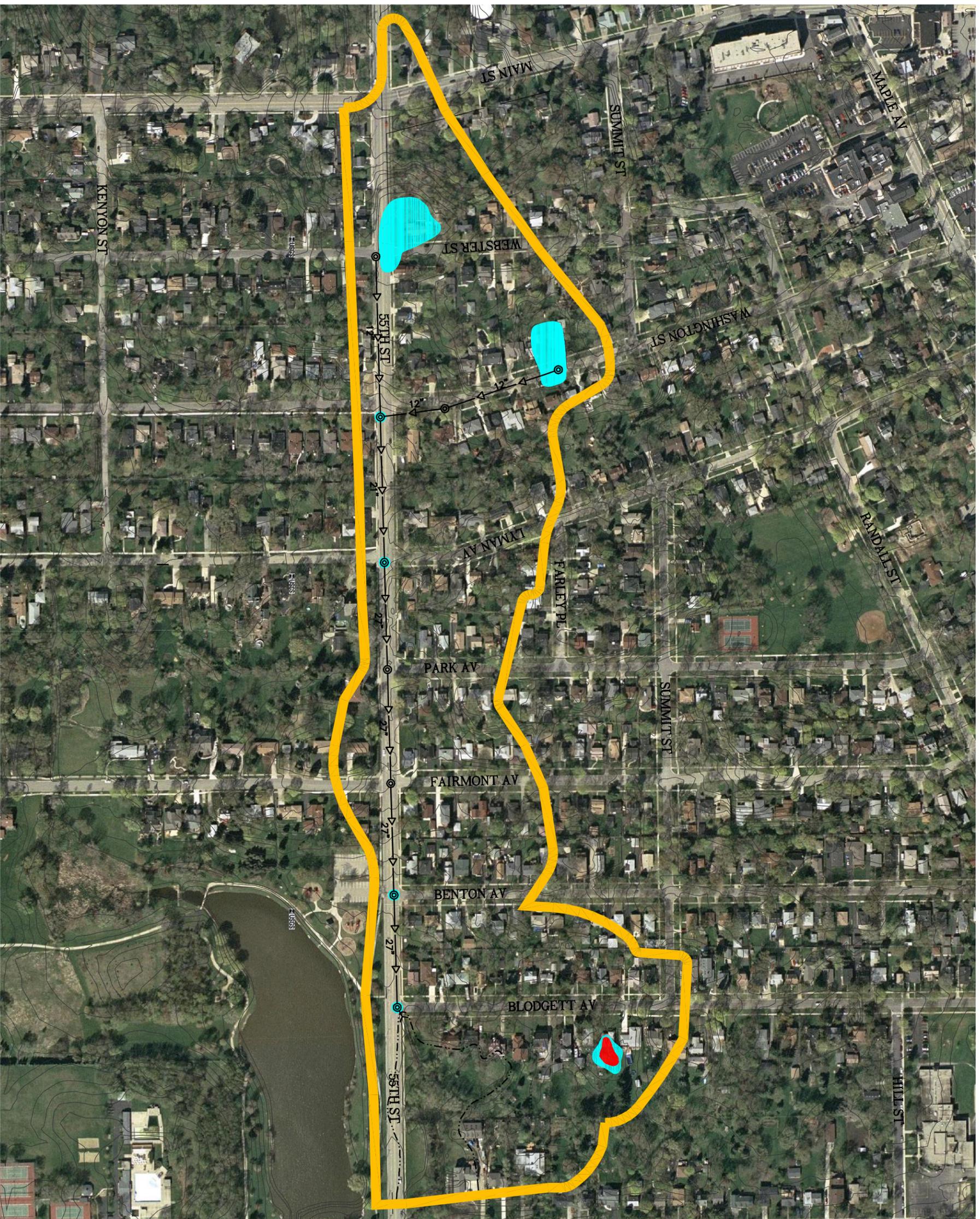
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**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

SCALE: 1" = 200'
DATE: JUNE, 2007
JOB NO.: 270210
SHEET: 01



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING
- 100-YEAR FLOODPLAIN

**PROBLEMS**

1. CHRONIC STREET FLOODING
2. NUISANCE STRUCTURAL FLOODING

**CAUSES**

1. DEPRESSIONAL AREAS

**PRIORITY**

**LOW**

REVISIONS:	
DATE	BY

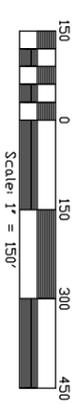
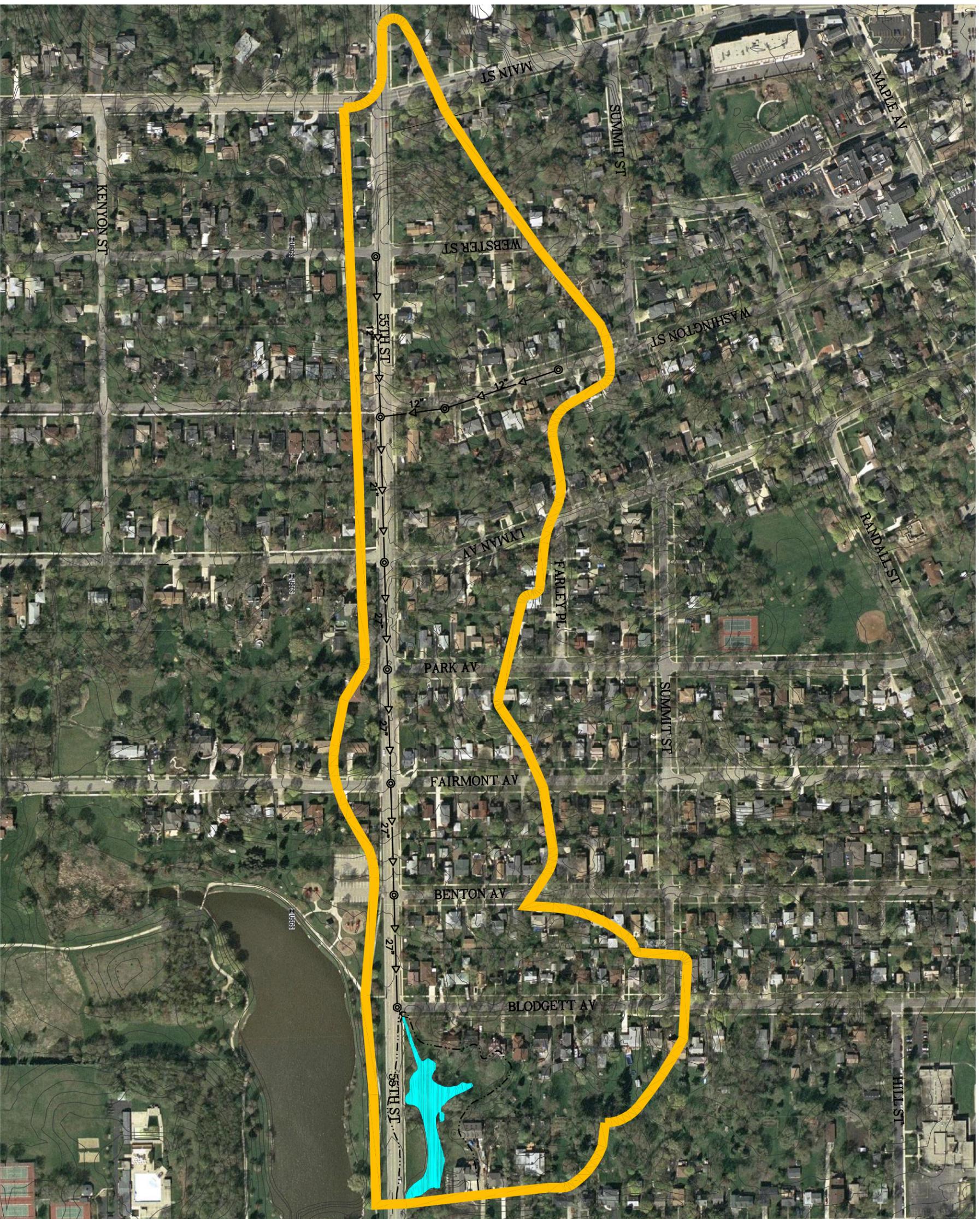
DESCRIPTION	DATE	BY

DESIGNED BY:	MM
CHECKED BY:	MM
APPROVED BY:	MM

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ENGINEERING RESOURCE ASSOCIATES, INC.	426 SOUTH THIRD STREET GENEVA, ILLINOIS 60134 PHONE (630) 202-8689 FAX (630) 202-8698

SCALE: 1" = 150'
DATE: JUNE, 2007
JOB NO.: 270210
SHEET: 02

**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**



**LEGEND**

- ◇— PROPOSED 10 YEAR STORM SEWER
- ◇— PROPOSED 100 YEAR STORM SEWER
- STORAGE FACILITY
- SMALL CHANNEL MAINTENANCE
- LARGE CHANNEL MAINTENANCE
- ▨ STREAMBANK STABILIZATION
- ▨ PERMANENT EASEMENTS NEEDED
- ▨ PROPERTY BUYOUT
- 100-YEAR FLOODPLAIN

**SOLUTIONS**

1. CHANNEL MAINTENANCE
2. REPAIR OUTLET STRUCTURE

**COST**

PROJECT COST: 370,000  
 GENERAL IMPROVEMENT COST: 200,000  
 TOTAL COST: 570,000

**PRIORITY**

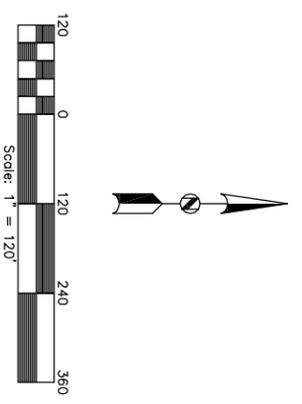
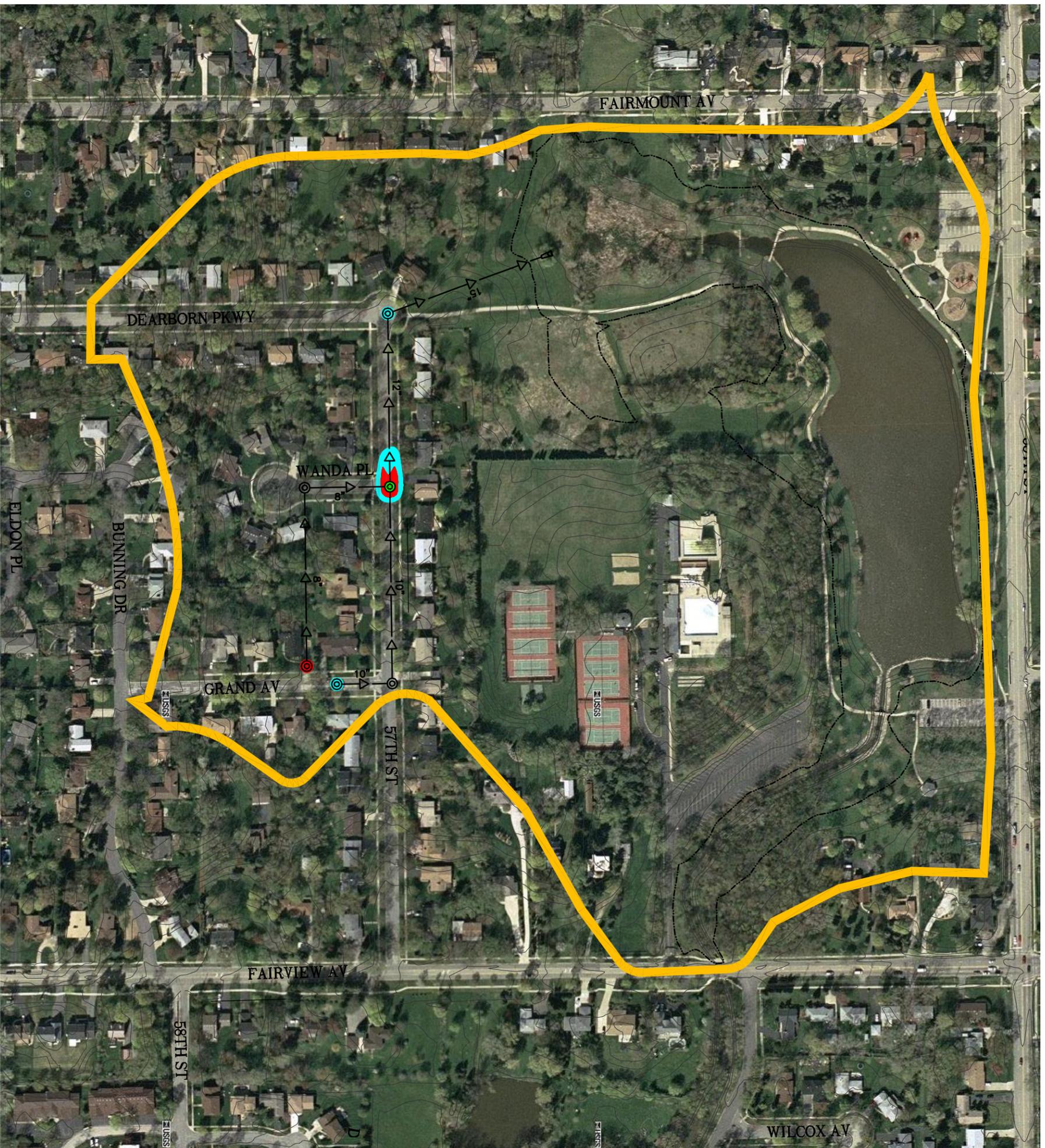
**LOW**

REVISIONS:	
DATE	BY

ENGINEERING <b>RESOURCE ASSOCIATES, INC.</b> CONSULTING ENGINEERS, SCIENTISTS & SURVEYORS	35701 WEST AVENUE, SUITE 150 WARRENVILLE, ILLINOIS 60555 PHONE (630) 595-5000 FAX (630) 595-2152
ENGINEER <b>MM</b>	CHECKED BY <b>MM</b>
APPROVED BY <b>MM</b>	DATE <b>MM</b>

**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

PROJECT NO. <b>270210</b>	SCALE: 1" = 150' DATE: JUNE, 2007 JOB NO.: 270210 SHEET: 02
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**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING
- 100-YEAR FLOODPLAIN

**PROBLEMS**

1. CHRONIC STREET FLOODING
2. NUISANCE STRUCTURAL FLOODING
3. NUISANCE YARD FLOODING

**CAUSES**

1. STORM SEWER CAPACITY

**PRIORITY**

**LOW**

REVISIONS:	
DATE	BY

DATE	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

DRAWN BY: DB  
 CHECKED BY: MM  
 APPROVED BY: MM



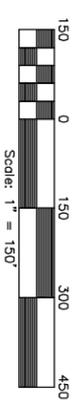
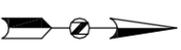
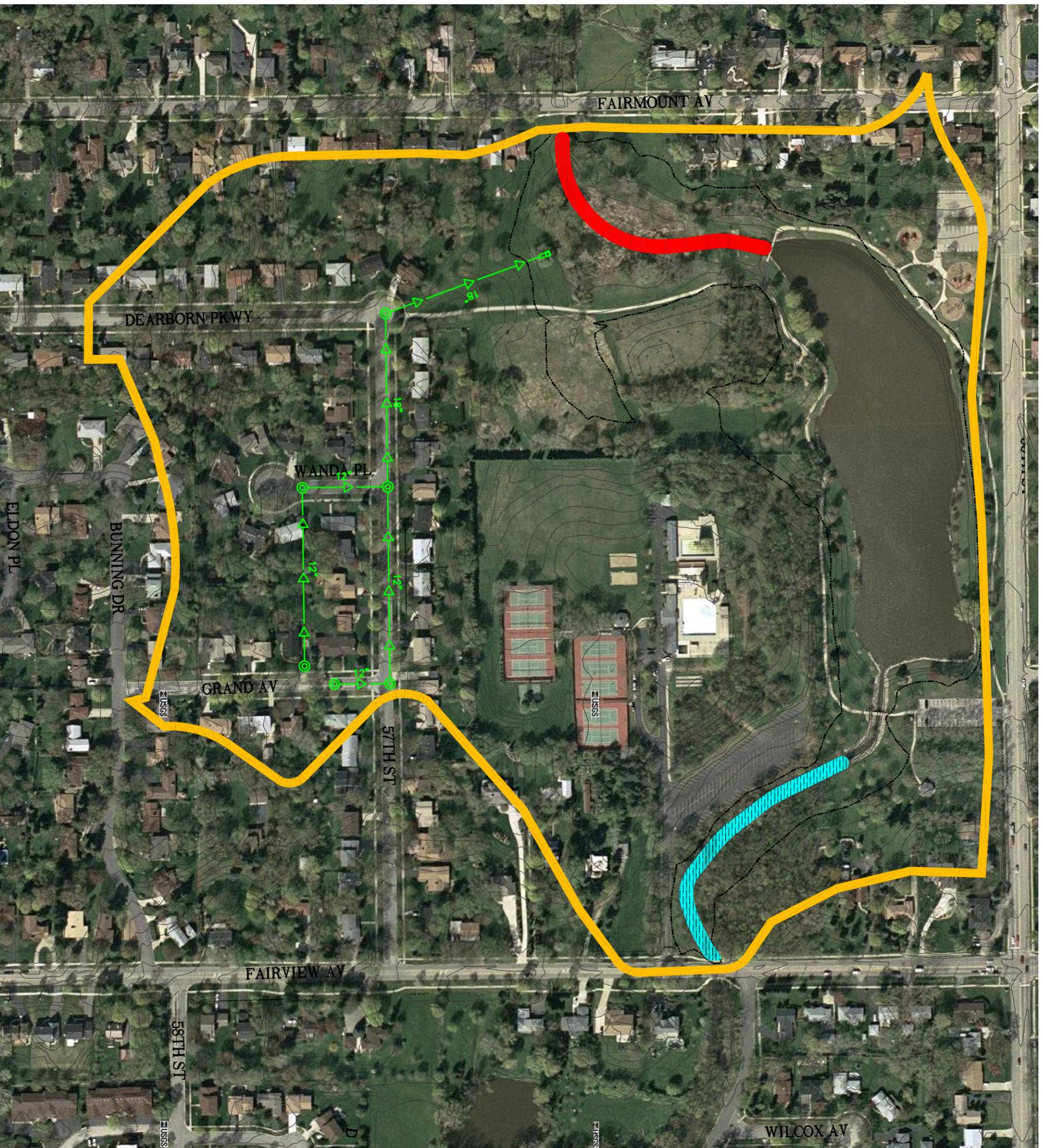
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 FAX (630) 202-8088

**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

SCALE:
1" = 120'
DATE: JUNE, 2007
JOB NO.: 270210
SHEET: 1 OF 1



**LEGEND**

-  PROPOSED 10 YEAR STORM SEWER
-  PROPOSED 100 YEAR STORM SEWER
-  STORAGE FACILITY
-  SMALL CHANNEL MAINTENANCE
-  LARGE CHANNEL MAINTENANCE
-  STREAMBANK STABILIZATION
-  PERMANENT EASEMENTS NEEDED
-  PROPERTY BUYOUT
-  100-YEAR FLOODPLAIN

**SOLUTIONS**

1. PROVIDE 10-YEAR CAPACITY STORM SEWER
2. PERFORM LARGE STREAMBANK MAINTENANCE
3. PERFORM STREAMBANK STABILIZATION
4. PERFORM SMALL STREAMBANK MAINTENANCE

**COST**

PROJECT COST:	1,630,000
GENERAL IMPROVEMENT COST:	140,000
TOTAL COST:	1,770,000

**PRIORITY**

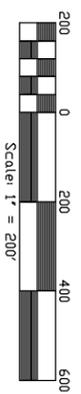
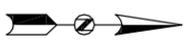
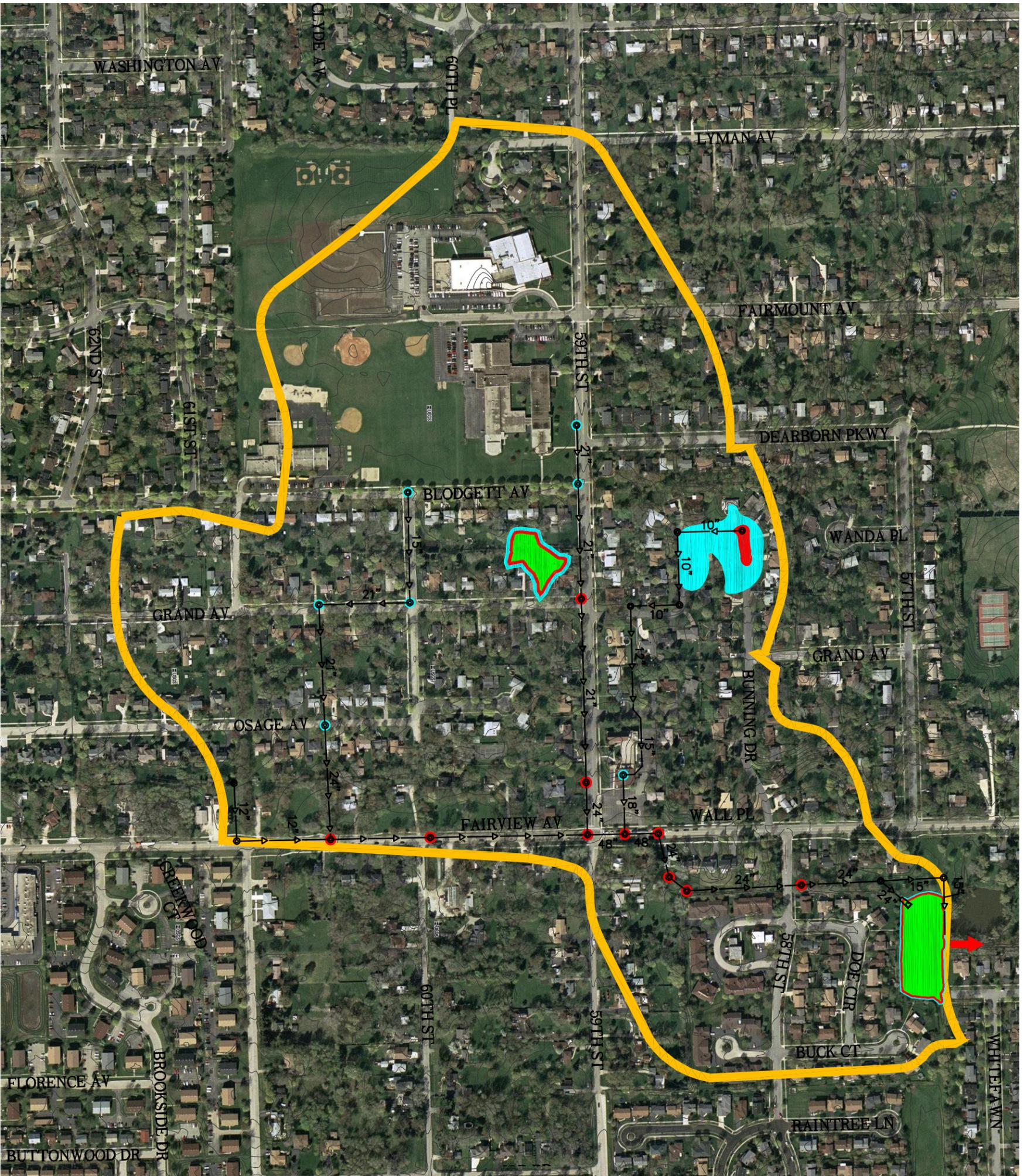
**LOW**

REVISIONS:	
DATE	BY

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<p>426 SOUTH THIRD STREET GENEVA, ILLINOIS 60134 PHONE (630) 262-8689 FAX (630) 262-8688</p>	<p>DATE: JUNE, 2007 JOB NO.: 270210 SHEET: 02</p>

**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

**PROPOSED CONDITIONS SUBWATERSHED E**



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING

**PROBLEMS**

1. CHRONIC STREET FLOODING
2. NUISANCE STRUCTURAL FLOODING
3. NUISANCE YARD FLOODING

**CAUSES**

1. STORM SEWER CAPACITY
2. DEPRESSIONAL AREAS

**PRIORITY**

**LOW**

REVISIONS:	
DATE	BY

DATE	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

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WARRENVILLE, ILLINOIS 60555  
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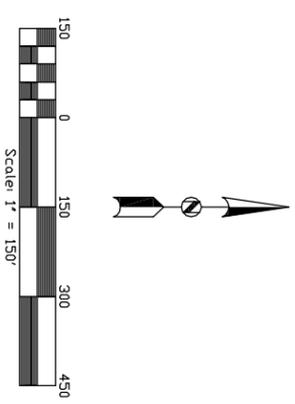
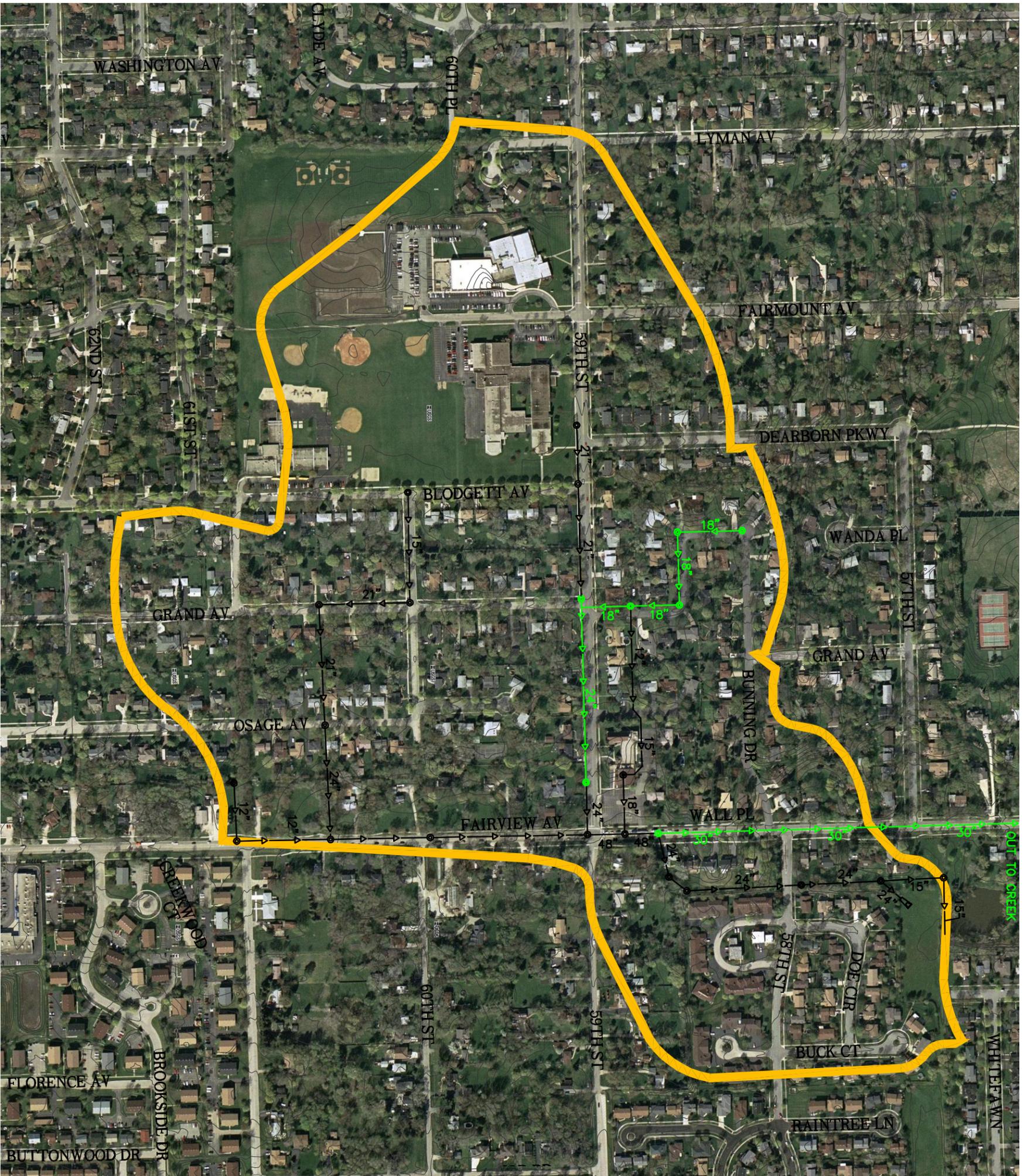
426 SOUTH THIRD STREET  
GENEA, ILLINOIS 60134  
PHONE (630) 202-8689  
FAX (630) 202-8688

DATE	DESCRIPTION

ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN

EXISTING CONDITIONS SUBWATERSHED F

SCALE: 1" = 200'  
DATE: JUNE, 2007  
JOB NO.: 270210  
SHEET: 02



**LEGEND**

- PROPOSED 10 YEAR STORM SEWER
- PROPOSED 100 YEAR STORM SEWER
- STORAGE FACILITY
- SMALL CHANNEL MAINTENANCE
- LARGE CHANNEL MAINTENANCE
- STREAMBANK STABILIZATION
- PERMANENT EASEMENTS NEEDED
- PROPERTY BUYOUT
- 100-YEAR FLOODPLAIN

**SOLUTIONS**

1. PROVIDE 10-YEAR CAPACITY STORM SEWERS
2. CONSTRUCT BYPASS SEWER TO CREEK

**COST**

PROJECT COST: 1,920,000  
 GENERAL IMPROVEMENT COST: 3,670,000  
 TOTAL COST: 5,590,000

**PRIORITY**

**LOW**

REVISIONS:	
DATE	BY

DATE	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

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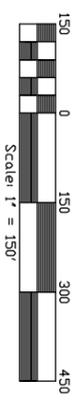
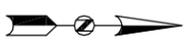
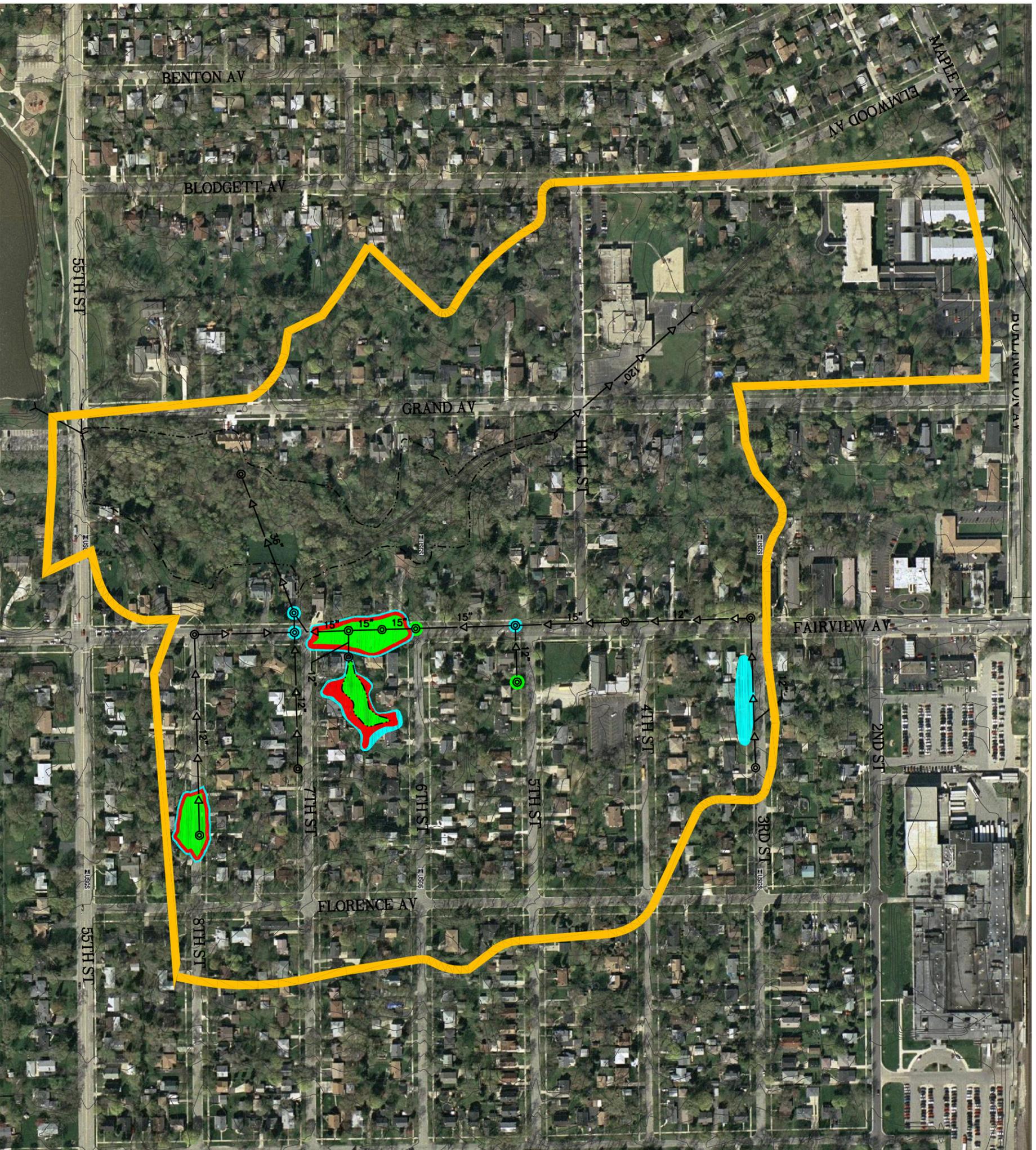
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**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

SCALE: 1" = 200'

DATE: JUNE, 2007  
 JOB NO.: 270210  
 SHEET: 02



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 100-YEAR FLOODPLAIN

**PROBLEMS**

1. CHRONIC STREET FLOODING
2. NUISANCE STRUCTURAL FLOODING
3. NUISANCE YARD FLOODING

**CAUSES**

1. FLOODPLAIN FROM CREEK
2. DEPRESSIONAL AREAS
3. STORM SEWER CAPACITY

**PRIORITY**

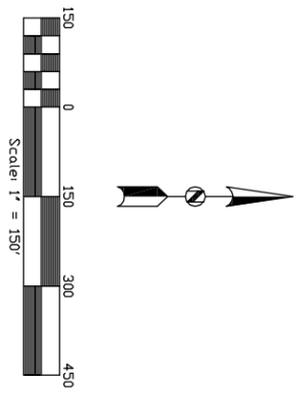
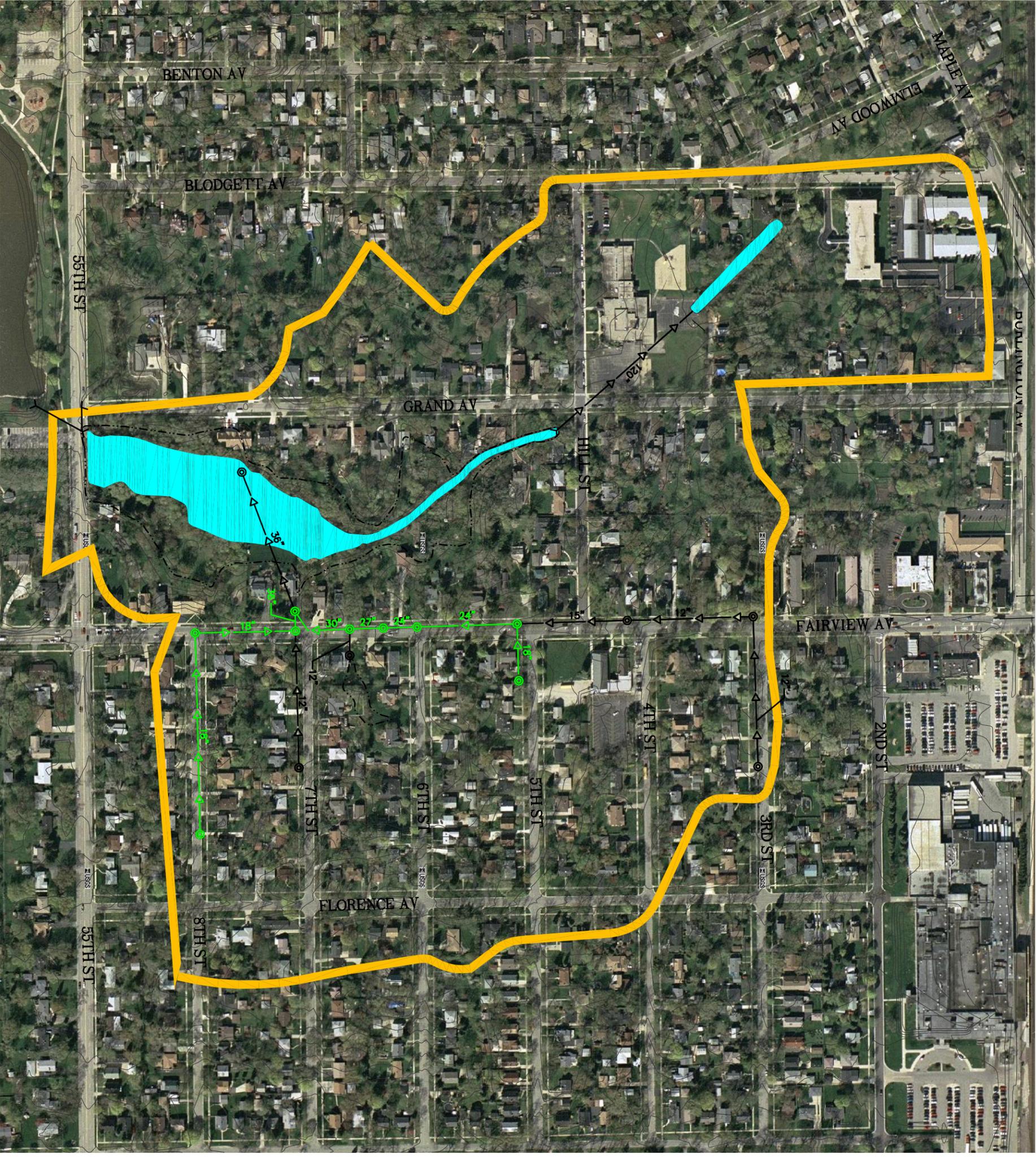
**LOW**

REVISIONS:	
DATE	BY

DATE	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

DESIGNED BY:	MM
CHECKED BY:	MM
APPROVED BY:	MM

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426 SOUTH THIRD STREET GENEA, ILLINOIS 60134 PHONE (630) 202-8689 FAX (630) 202-8698	ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN
SCALE: 1" = 200'	DATE: JUNE, 2007
JOB NO: 270210	SHEET: 02



**LEGEND**

-  PROPOSED 10 YEAR STORM SEWER
-  PROPOSED 100 YEAR STORM SEWER
-  STORAGE FACILITY
-  SMALL CHANNEL MAINTENANCE
-  LARGE CHANNEL MAINTENANCE
-  STREAMBANK STABILIZATION
-  PERMANENT EASEMENTS NEEDED
-  PROPERTY BUYOUT
-  100-YEAR FLOODPLAIN

**SOLUTIONS**

1. PROVIDE 10-YEAR CAPICITY STORM SEWER
2. PERFORM LARGE CHANNEL MAINTENANCE

**COST**

PROJECT COST: 2,220,000  
 GENERAL IMPROVEMENT COST: 330,000  
 TOTAL COST: 2,550,000

**PRIORITY**

**LOW**

REVISIONS:	
DATE	BY

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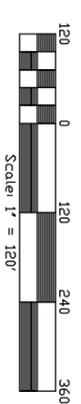
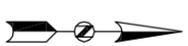
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ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN

PROPOSED CONDITIONS SUBWATERSHED G

SCALE: 1" = 200'  
 DATE: JUNE, 2007  
 JOB NO.: 270210  
 SHEET: 02



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING
- 100-YEAR FLOODPLAIN

**PROBLEMS**

1. CHRONIC STRUCTURAL FLOODING
2. CHRONIC STREET FLOODING
3. NUISANCE YARD FLOODING

**CAUSES**

1. FLOODPLAIN FROM ST. JOSEPH CREEK
2. CHANNEL CAPACITY
3. OVERTOPPING OF DETENTION FACILITY

**PRIORITY**

**MEDIUM**

REVISIONS:	
DATE	BY

DRAWN BY:	MM
CHECKED BY:	MM
APPROVED BY:	MM

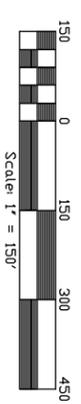
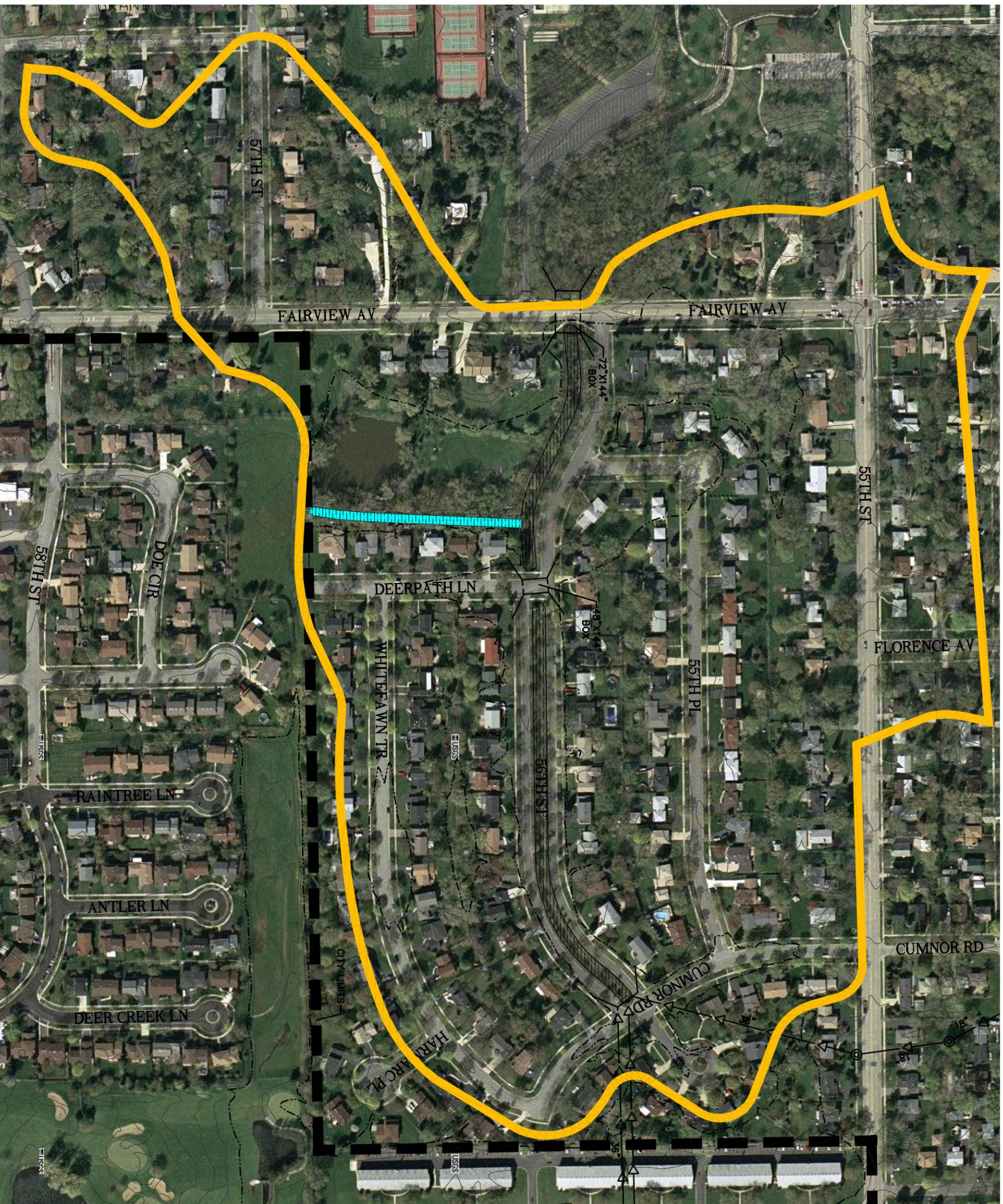


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**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

SCALE: 1" = 120'
DATE: JUNE, 2007
JOB NO.: 270210
SHEET: 02



**LEGEND**

- PROPOSED 10 YEAR STORM SEWER
- PROPOSED 100 YEAR STORM SEWER
- STORAGE FACILITY
- SMALL CHANNEL MAINTENANCE
- LARGE CHANNEL MAINTENANCE
- STREAMBANK STABILIZATION
- PERMANENT EASEMENTS NEEDED
- PROPERTY NEEDED
- 100-YEAR FLOODPLAIN

**SOLUTIONS**

1. PERFORM LARGE CHANNEL MAINTENANCE
2. PERFORM LARGE STREAMBANK STABILIZATION

**COST**

PROJECT COST: 750,000  
 GENERAL IMPROVEMENT COST: 120,000  
 TOTAL COST: 870,000

**PRIORITY**

**MEDIUM**

REVISIONS:	
DATE	BY

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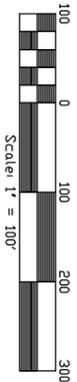
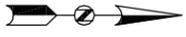
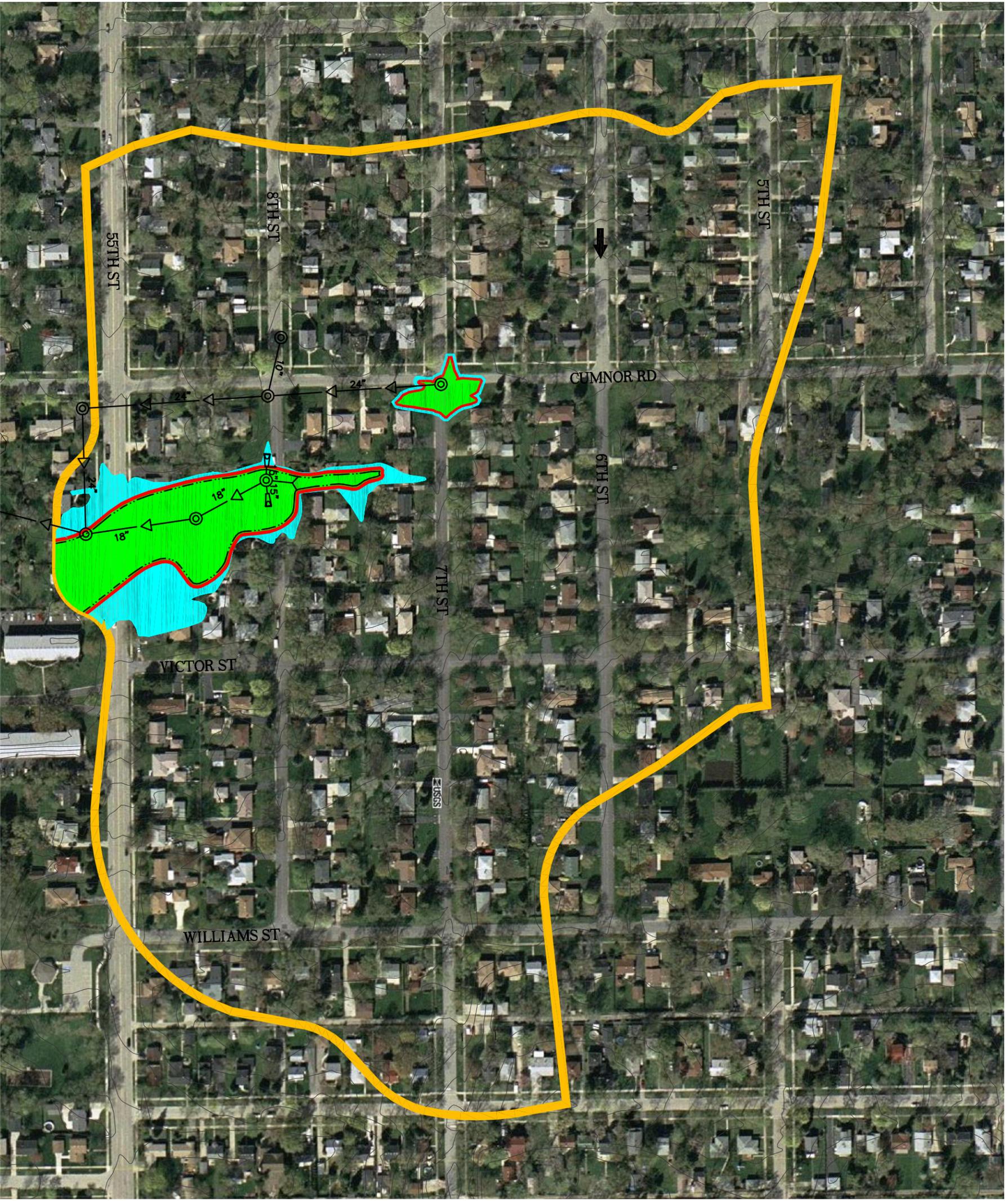
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**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

TITLE:	
<b>PROPOSED CONDITIONS SUBWATERSHED H</b>	

SCALE: 1" = 120'	
DATE: JUNE, 2007	
JOB NO: 270210	
SHEET: 01	



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING
- 100-YEAR FLOODPLAIN

**PROBLEMS**

1. CRITICAL STRUCTURAL FLOODING
2. CRITICAL STREET FLOODING
3. CHRONIC STREET FLOODING
4. NUISANCE YARD FLOODING

**CAUSES**

1. DEPRESSIONAL AREAS
2. LACK OF OVERLAND FLOW PATHS
3. FLOODPLAIN FROM CREEK
4. STORM SEWER CAPACITY

**PRIORITY**

**HIGH**

REVISIONS:	
DATE	BY

DATE	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

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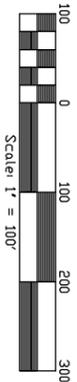
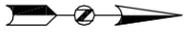
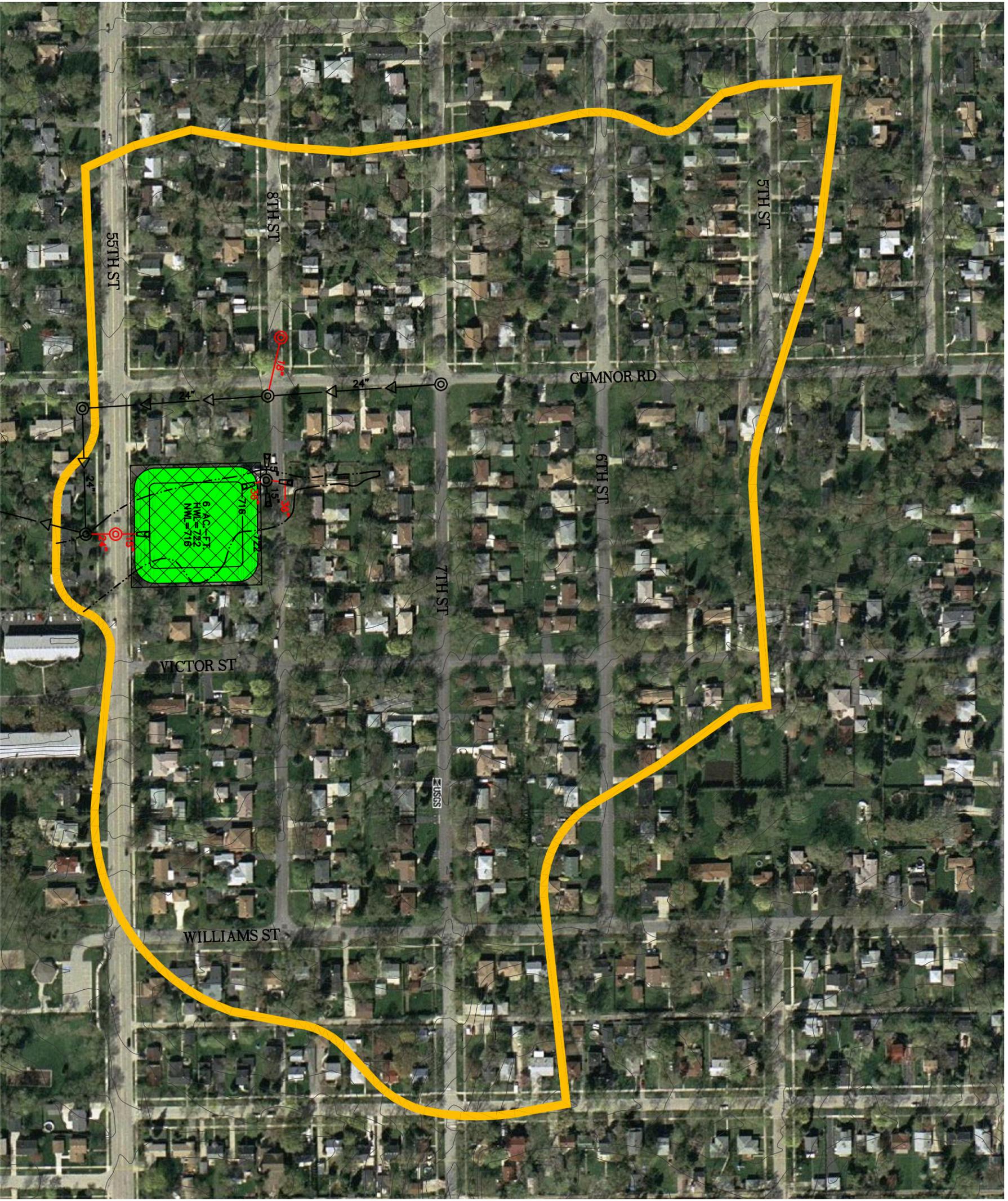
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ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN

EXISTING CONDITIONS SUBWATERSHED I

SCALE: 1" = 100'  
DATE: JUNE, 2007  
JOB NO.: 270210  
SHEET: 02



**LEGEND**

-  PROPOSED 10 YEAR STORM SEWER
-  PROPOSED 100 YEAR STORM SEWER
-  STORAGE FACILITY
-  SMALL CHANNEL MAINTENANCE
-  LARGE CHANNEL MAINTENANCE
-  STREAMBANK STABILIZATION
-  PERMANENT EASEMENTS NEEDED
-  PROPERTY BUYOUT
-  100-YEAR FLOODPLAIN

**SOLUTIONS**

1. BUY PROPERTIES WITHIN FLOOD PRONE AREA
2. CONSTRUCT 6 AC.-FT. STORAGE BASIN
3. PROVIDE 100-YEAR CAPACITY STORM SEWER

**COST**

PROJECT COST: 7,670,000  
 GENERAL IMPROVEMENT COST: 4,310,000  
 TOTAL COST: 11,980,000

**PRIORITY**

**HIGH**

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DATE	BY

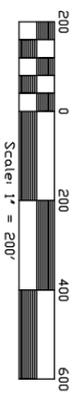
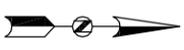
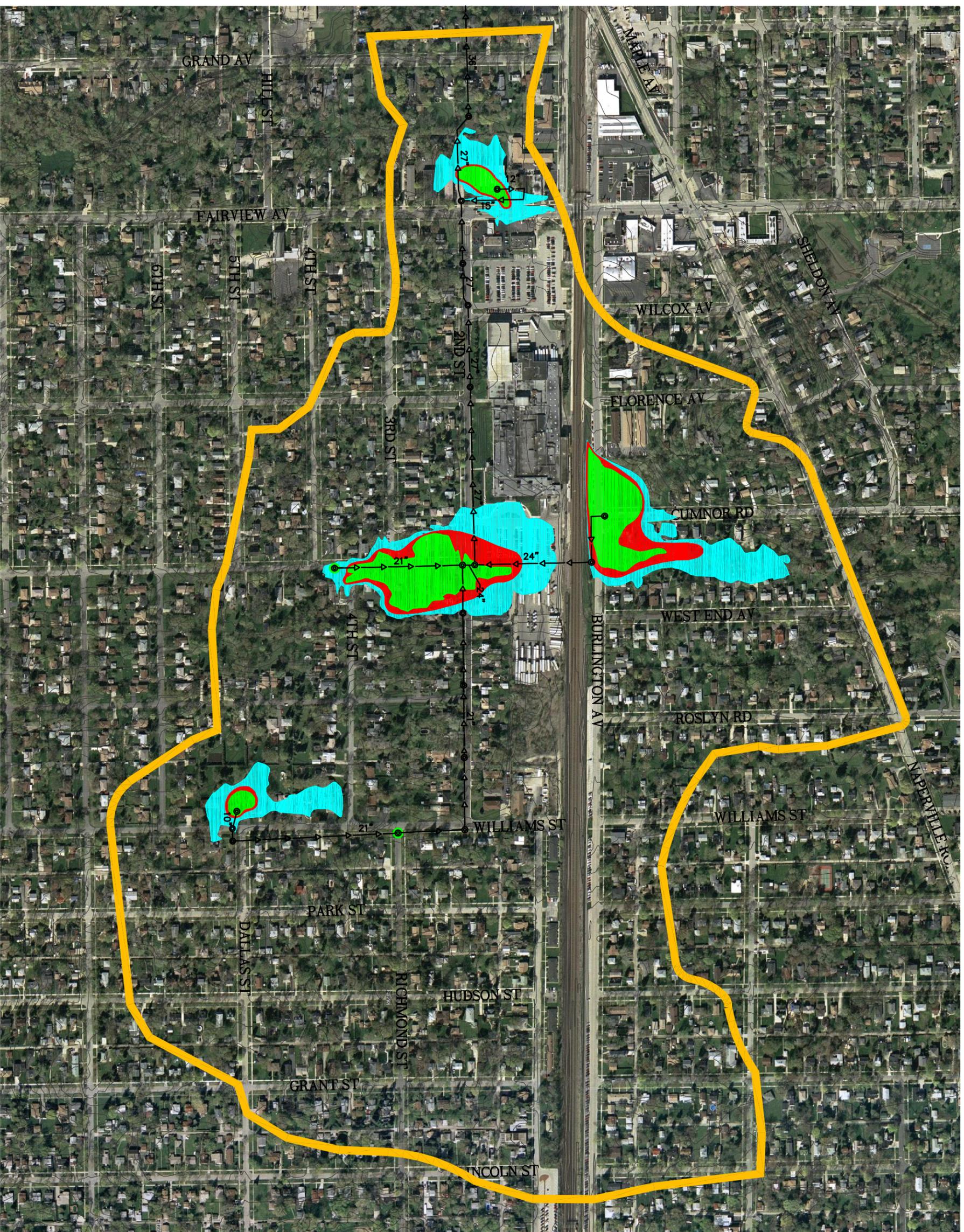
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 DATE: JUNE, 2007  
 JOB NO.: 270210  
 SHEET: 01



**LEGEND**

- 5-YEAR SURCHARGE
- 10-YEAR SURCHARGE
- 100-YEAR SURCHARGE
- 5-YEAR PONDING
- 10-YEAR PONDING
- 100-YEAR PONDING

**PROBLEMS**

1. CRITICAL STREET FLOODING
2. CHRONIC STREET FLOODING
3. CRITICAL STRUCTURAL FLOODING
4. NUISANCE YARD FLOODING

**CAUSES**

1. STORM SEWER CAPACITY
2. DEPRESSIONAL AREAS
3. LACK OF OVERLAND FLOW ROUTES

**PRIORITY**

**HIGH**

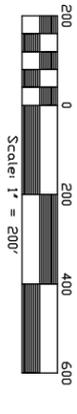
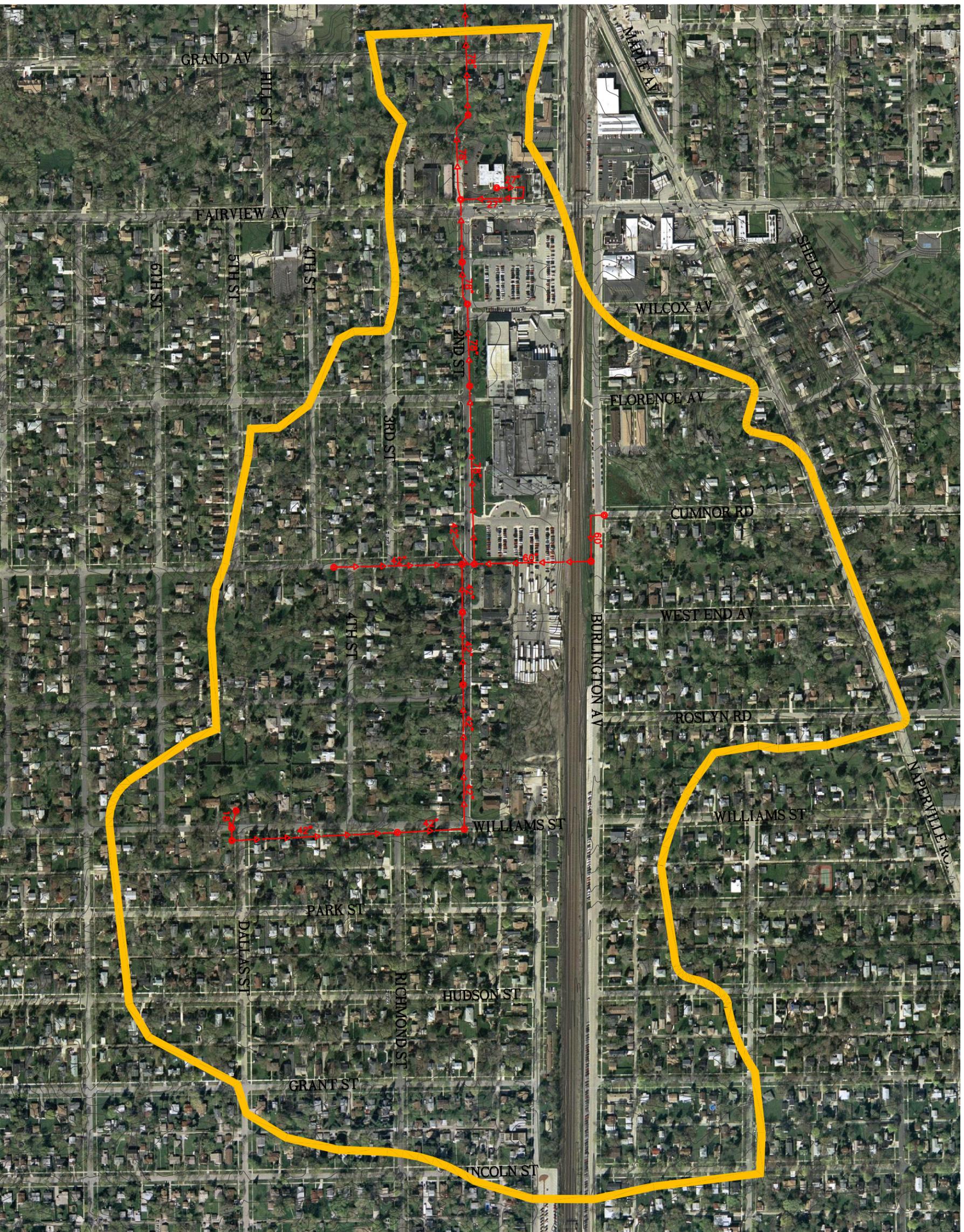
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SCALE: 1" = 200'
DATE: JUNE, 2007
JOB NO.: 270210
SHEET: 02



**LEGEND**

-  PROPOSED 10 YEAR STORM SEWER
-  PROPOSED 100 YEAR STORM SEWER
-  STORAGE FACILITY
-  SMALL CHANNEL MAINTENANCE
-  LARGE CHANNEL MAINTENANCE
-  STREAMBANK STABILIZATION
-  PERMANENT EASEMENTS NEEDED
-  PROPERTY BUYOUT
-  100-YEAR FLOODPLAIN

**SOLUTIONS**

1. PROVIDE 100-YEAR CAPACITY STORM SEWER

**COST**

PROJECT COST: 9,700,000  
 GENERAL IMPROVEMENT COST: 6,170,000  
 TOTAL COST: 15,870,000

**PRIORITY**

**HIGH**

REVISIONS:	
DATE	BY

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 APPROVED BY: MM



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**ST. JOSEPH CREEK SOUTH WATERSHED IMPROVEMENT PLAN**

SCALE: 1" = 200'  
 DATE: JUNE, 2007  
 JOB NO.: 270210  
 SHEET: 01

### **5.3.3 Stormwater Project Details**

See Appendix A in Chapter 3A for detailed descriptions of alternatives, deviations, challenges, issues associated with alternatives, required permits, and detailed cost estimates.

Table 5.1 follows.

Table 5.1 Stormwater Projects Per Subwatershed in St. Joseph Creek South Watershed

Sub-watershed ID	Problem Area ID	Problem Area Location	Problem Area Severity	Stormwater Project Description per Watershed	Potential Wetland Impacts	Easement Issues	Permit Requirements	Estimated Construction Schedule
		Intersection/General location description	High, Moderate, Low		Yes, No		USACOE, DG, DC FEMA, IDNR/OWR, KANE/DUPAGE	
SJS-A	SJS-44	Hillcrest between George and Jefferson	Moderate	Provide 10-Year storm sewer outlet for SJS 44 Replace trunk line to eliminate back pitched pipes, standing water and debris Provide 10- year storm sewer SJS 64 & 60th place. Construct storage facility	Yes	36 Permanent easements for storage facility Sewer replacement for SJS 44 &64	DG, DC, FEMA, IDNR/OWR, USACOE, IEPA, KANE/DUPAGE	20 Months
	SJS-400	North of 61st between Ridgewood and Dunham	Low					
	SJS-57	East 61st and Dunham	Moderate					
	SJS-401	59th West of Brookbank	Moderate					
	SJS-64	SW of Brookbank and 60th	Moderate					
	SJS-402	60th and Carpenter	Moderate					
SJS-B	SJS-58	NW of Jefferson and Middaugh	Low	Construct storage facility Construct bypass sewer Preform channel maintenance	Yes	32 Permanent easements for storage facility Channel maintenance	DG, DC, FEMA, IDNR/OWR, USACOE, IEPA, KANE/DUPAGE	14 Months
	SJS-403	Brookbank and Jefferson	Moderate					
	SJS-404	Carpenter between 59 and blanchard	Low					
	SJS-405	NW of Main St and 59th	Low					
SJS-C	SJS-85/89	E. of Main between 55th and Kenyon	Low	Construct storage facility Provide 10-year storm sewer for SJS 95/187/102/85/95/88 Replace creek culverts to pass 100- year storm Replace 59th St. storm sewer and reroute to storage facility Perform channel maintenance	Yes	Park storage facility Channel maintenance Sewer replacement for SJS 85/89/102/187/95 & washington st. residents.	DG, DC, FEMA, IDNR/OWR, USACOE, IEPA, KANE/DUPAGE	14 Months
	SJS-95/187/102	N. of Kenyon between Washigton and Fairmount	Moderate					
	SJS-408	Kenyon and Washignton	Moderate					
	SJS-409	Fairmount E. of Kenyon and Lyman	Moderate					
	SJS-407	Webster between kenyon and Blanchard	Low					
	SJS-406	Washington between Blanchard and 59th	Low					
	SJS-88	Webster between Blanchard and 59th	Low					
SJS-D	SJS-87	Northwest of 55th and Webster	Low	Perform channel maintenance	Yes	Channel maintenance	DG, DC, USACOE, IEPA, KANE/DUPAGE	1 Month
	SJS-91	Southwest of Washington and Summit	Low					
	SJS-114	East of Summit and Blodgett	Low					
SJS-E	SJS-410	57th and Wanda	Low	Provide 10- year storm sewer for 57th st. system Preform channel maintenance	Yes	Sewer replacement Channel maintenance	DG, DC, USACOE, IEPA, KANE/DUPAGE	2 Months
SJS-F	SJS-115	W. of Bunning and Grand	Low	Construct bypass storm sewer Provide 10-year strom sewer for SJS 115	No	N/A	DG	4 Months
	SJS-116	SW. of 59th and Grand	Low					
	SJS-411	Grand and 60th	Moderate					
	SJS-412	Osage between 60th and 61st	Low					
SJS-G	SJS-413	3rd between Florence and Fairview	Low	Provide 10- year storm sewer on 5th, 8th, and fairview ave. Perform channel maintenance	Yes	Channel maintenance	DG, DC, USACOE, IEPA, KANE/DUPAGE	5 Months
	SJS-184	S. of 6th between Fairview and Florence	Moderate					
	SJS-414	8th between Florance and Fairview	Low					
SJS-H	SJS-415	Wilcox and 55th Pl.	Low	Perform channel maintenance	No	Channel maintenance	DG	2 Months
	SJS-416	SW. of 56th and Deerpath	Moderate					
	SJS-417	56th between Deerpath and Cumnor	Moderate					
	SJS-418	Harmarc and White Fawn	Moderate					
SJS-I	SJS-419	6th and Cumnor	Low	Buyout approximately 8 properties in floodplain Create storage facility	No	N/A	DG, DC	3 Months
	SJS-124	8th between Cumnor and Florence	Moderate					
	SJS-125	N. of 55th between Cumnor and Victor	High					
	SJS-420	Williams and 8th	Low					
SJS-J	SJS-118	Fairview between 3rd and Burlington	Moderate	Provide entire watershed with 100- year strom sewer	Yes	Railroad crossing Sewer replacement for SJS 118/128 Sewer replacement for factory north side of 2nd Sewer replacement west of fairview	DG, DC, USACOE, IEPA, KANE/DUPAGE	8 Months
	SJS-121/123	2nd and Cumnor	High					
	SJS-128	Willams Between Richmond and 6th	Moderate					

### **5.3.4 Engineer's Estimate of Probable Cost for Stormwater Projects**

A preliminary Engineer's Estimate of Probable Cost for Stormwater Projects was developed on a subwatershed basis as requested by the Village of Downers Grove. This estimate was developed for specific stormwater improvements such as replacing stormsewers, implementing storage facilities, performing channel maintenance, etc. The estimate was based on unit costs for typical projects as developed by Clark Dietz, Inc in conjunction with the Consultant Team and the Village of Downers Grove. Detailed cost estimates can be found in Tables A1.2 through A1.11 in the appendix of Chapter 3A.

### **5.3.5 Engineer's Estimate of Probable Cost for General Improvements**

A preliminary Engineer's Estimate of Probable Cost for General Improvements was developed on a subwatershed basis as requested by the Village of Downers Grove. The estimate was developed for general infrastructure improvements which included bringing stormsewer to all locations within the Village and improving rural cross-sectional roads. The estimate was based on unit costs for typical projects as developed by Clark Dietz, Inc in conjunction with the Consultant Team and the Village of Downers Grove. Detailed cost estimates can be found in Tables A1.2.1 through A1.11.1 in the appendix of Chapter 3A.

## **6.0 PROPOSED STORMWATER PROJECT PRIORITIZATION**

### **6.1 PRIORITIZATION METHOD**

The Watershed Map found in section 2.2.3 shows problem areas labeled as high, medium, or low. These labels define the urgency to alleviate flooding in these areas, with high being the most urgent. Proposed Subwatershed Exhibits found in section 5.3.2 are also labeled as high, medium, and low. This prioritization takes into account the individual areas shown on the Watershed Map and rates the Subwatershed as a whole. Table 6.1 below summarizes Subwatershed priorities.

Table 6.1 follows.

Table 6.1 Subwatershed Prioritization in St. Joseph Creek South Watershed

Sub-watershed ID	Location	Stormwater Project Summary per Subwatershed	Subwatershed Prioritization Data				Subwatershed Priority Level	
			Permit Req't's	Estimated Construction Schedule for Stormwater Projects	Estimate of Probable Cost, Stormwater Projects	Estimate of Probable Cost, General Improvements		Estimate of Total Probable Cost
	Intersection/General location description		USACOE, DG, DC FEMA, IDNR/OWR, KANE/DUPAGE					High, Medium, Low
SJS-A	North of 62nd, South of Thornwood, East of Springside, West of Main	Provide 10-Year storm sewer outlet for SJS 44 Replace trunk line to eliminate back pitched pipes, standing water and debris Provide 10- Year storm sewer SJS 64 & 60th place. Construct storage Facility	DG, DC, FEMA, IDNR/OWR, USACOE, IEPA, KANE/DUPAGE	20 Months	\$20,990,563	\$5,878,300	\$26,868,863	Medium
SJS-B	East of Dunham, West of Main, South of Blanchard, North of 59th	Construct storage facility Construct bypass sewer Perform channel maintenance	DG, DC, FEMA, IDNR/OWR, USACOE, IEPA, KANE/DUPAGE	14 Months	\$11,772,695	\$2,305,500	\$14,078,195	Medium
SJS-C	North of 61st, South of 55th East of Carpenter, West of Dearborn	Construct storage facility Provide 10-year storm sewer for SJS 95/187/102/85/95/88 Replace creek culverts to pass 100- year storm Replace 59th St. storm sewer and reroute to storage facility Perform channel maintenance	DG, DC, FEMA, IDNR/OWR, USACOE, IEPA, KANE/DUPAGE	14 Months	\$8,168,575	\$10,656,050	\$18,824,625	Medium
SJS-D	South of Summit, North of 55th, East of Summit, West of Grand	Perform channel maintenance	DG, DC, USACOE, IEPA, KANE/DUPAGE	1 Months	\$365,255	\$195,750	\$561,005	Low
SJS-E	South of 55th, North of 59th, East of Fairmount, West of Fairview	Provide 10- year storm sewer for 57th st. system Perform channel maintenance	DG, DC, USACOE, IEPA, KANE/DUPAGE	2 Months	\$1,625,668	\$143,550	\$1,769,218	Low
SJS-F	South of 57th, North of 62nd, East of lyman, West of Fairview	Construct bypass storm sewer Provide 10-year strom sewer for SJS 115	DG	4 Months	\$1,923,751	\$3,671,400	\$5,595,151	Low
SJS-G	South of Burlington, North of 55th, East of Blodgett, West of Florence	Provide 10- year storm sewer on 5th, 8th, and fairview ave. Perform channel maintenance	DG, DC, USACOE, IEPA, KANE/DUPAGE	5 Months	\$2,224,626	\$326,250	\$2,550,876	Low
SJS-H	East of Fairview, West of Victor, South of 59th, North of Bunning	Perform channel maintenance	DG	2 Months	\$10,150	\$117,450	\$127,600	Medium
SJS-I	North of 55th, South of 4th, East of Florence, West of Williams	Buyout approximately 8 properties in floodplain Create storage facility	DG, DC	3 Months	\$7,670,065	\$4,313,750	\$11,983,815	High
SJS-J	North of 7th, South of Maple, East of Blodgett, West of Adams	Provide entire watershed with 100- year strom sewer	DG, DC, USACOE, IEPA, KANE/DUPAGE	8 Months	\$9,697,383	\$6,166,850	\$15,864,233	High

## **7.0 ADDITIONAL ISSUES**

### **7.1 EASEMENTS**

Easements that may be required to implement the recommended alternatives are identified in Table 5.1 in section 5.3.3 of Chapter 3A.

### **7.2 FUTURE ROADWAY CROSS SECTION**

Multiple options of possible roadway cross sections are presented in Chapter 1 of this report. The design of roadways should be selected based on a review of existing neighborhood character, Village needs, resident preferences, existing geometric or right-of-way limitations, and other factors.

### **7.3 WATER QUALITY ISSUES**

Many of the proposed projects addressed water quality issues. For example storage basins have been proposed to reduce flow rate in channels and better filter stormwater runoff. DuPage County is currently in the process of revising the County Stormwater Ordinance that will require a minimum threshold of water quality solutions for all future projects, therefore, water quality design should be implemented in preliminary and final design. ERA has recently finished DuPage County's BMP manual that will provide multiple design solutions for specific applications.