

South East Watershed Assessment

Introduction

Material presented in the following summary documents current stormwater management and flooding issues for the South East Watershed. Information presented is based on a review of available information related to current conditions in the drainage basin. No comprehensive analysis of stormwater management and flooding issues in the watershed has been performed in the last 20 years.

Watershed Description

Description and Land Use

The South East watershed is located in the central part of the City of Rockford on the east side of the Rock River. The watershed drains approximately 5,450 acres at its mouth. Roughly 92% of the watershed is located within the City of Rockford. The remaining 8% of the watershed lies in unincorporated Winnebago County. The watershed is large and compact, with the stream entering the Rock River just south of the commercial center of the City.

Watershed Statistics: South East	
Total Area:	5,450 ac.
Total Area within City:	4,985 ac.
% of City within Watershed:	12.7 %
Other Stakeholders:	None
No. of Detention Facilities	13
No. of Outfalls	53

The South East watershed is about 85% developed. The majority of the current development has occurred in the south and central portions of the watershed. Though predominantly residential, the South East watershed also contains commercial and industrial developments in the center and south. The South East watershed also contains a school, Sandy Hollow Golf Course, and some vacant agricultural land in the southeastern corner.

Topography and Soils

The topography of the South East watershed is typical of the watersheds within the eastern part of the City of Rockford. Ground elevations within the watershed range from about 850 feet NAVD just east of Alpine Road, to about 700 feet NAVD near the ditch's confluence with the Rock River.

Soils within the South East watershed consist primarily of type B soils, with a large pocket of type D soils in the northwestern portion. Type B soils are soils with moderately low runoff

potential when thoroughly wet. Water can be transmitted through these soils without impediment. Type B soils typically have less than 20 percent clay, and between 50 and 90 percent sand with a loamy sand or sandy loam textures. These soils have moderately fine to moderately coarse textures. Type D soils are characterized by properties that restrict water movement through the soil. Type D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures. They have high runoff potential when thoroughly wet.⁷ The predominance of type B soils in the South East watershed should facilitate infiltration of rainfall in pervious areas, thereby contributing to lower runoff volumes and rates than in basins with less pervious soil types.

Primary Receiving Stream

South East Drainage Ditch is the primary receiving stream for the South East watershed. The creek is approximately 22,000 feet (4.2 mi.) long and exists in man-made state. The Ditch is about 25' wide and is concrete lined. According to the FIRM maps from FEMA, they refer to the South East Drainage Ditch as the *Unnamed Tributary to the Rock River*. There is a LOMR, with an effective date of 2003, for the *Unnamed Tributary to the Rock River*, so there should be a Flood Profile from the FIS study. However, there is no ditch profile from the 2006 Flood Insurance Study for Winnebago County and Incorporated Areas. This may be an oversight.

Due to the lack of a receiving stream within the watershed itself, there are no impoundments or gauging stations in South East.

There is no readily available flow data for the South East watershed as the watershed's contribution to the Rock River can not be feasibly measured.

There is no readily available flow data for the South East watershed.

Given the character of the watershed, flooding within South East is of a gradual nature. There is little localized flooding along the ditch. Because, as shown in Figure SE-1, the floodplain along South East is relatively narrow over most of the length of the stream. Areas where the mapped floodplain appears to include developed properties include only areas that lie outside of the City's boundary (in Winnebago County) and seem to only include parkland, north of Balsam Road.

Records maintained by the Federal Emergency Management Agency (FEMA), indicate that one letter of map revision (LOMRs) has been issued for development projects in the South East watershed during the past 30 years.

⁷ Burke, Christopher and Thomas Burke. HERPICC Stormwater Drainage Manual. West Lafayette, Indiana: Purdue Research Foundation, 1994.

Water Quality and NPDES Discharges

SCORE has two sites, R4 and R5, for storm water sampling in the Southeast Watershed (Table SE-1).

**Figure SE-3
 WATER QUALITY SAMPLING SITES
 SOUTHEAST WATERSHED, ROCKFORD, ILLINOIS**



**Table SE-1
 SAMPLING SITES
 SOUTHEAST WATERSHED, ROCKFORD, ILLINOIS**

Station	Location	Station Type	Number of Samples (2003-2008)	Parameters Measured
R4	8 th St. and Wills St.	Storm water	11	pH, Fecal Coliform, BOD, COD, TSS, TDS, FOG, Hardness, Ammonia-N, Nitrate-N, TKN, P, Cyanide, Cu, Cd, Zn, Pb, phenol
R5	Forest View Road and 28 th Avenue	Storm water	8	pH, Fecal Coliform, BOD, COD, TSS, TDS, FOG, Hardness, Ammonia-N, Nitrate-N, TKN, P, Cyanide, Cu, Cd, Zn, Pb, phenol

Station R4, receiving storm water runoff from a 780-acre industrial, commercial and residential area had the highest mean TSS concentration. A large storage yard and tool manufacturing facility adjacent to R4 has been identified as a significant source of TSS and is likely responsible for the high concentrations observed there. The highest concentrations of lead and zinc, and the

highest values for hardness, were also recorded from R4 which may also be attributed to the storage yard. Overall, though, with a few exceptions, concentrations of heavy metals in storm water are low and suggest that runoff from industrial and commercial areas is reasonably well managed⁸.

Among the five storm water stations, the highest concentrations of nitrate N in storm water were observed at R4; the lowest concentrations were observed at R1 and R5. Measurements of phosphorus between storm water sampling sites indicate that concentrations are not statistically different⁹.

NPDES-permitted point sources within the watershed are listed in Table SE-2.

Table SE-2
NPDES POINT SOURCES LOCATED WITHIN THE SOUTHEAST WATERSHED
ROCKFORD, ILLINOIS

NPDES Permit #	Facility Name	Receiving Water
IL0003883	Borg-Warner Corp-Mechanics Div	Rock River
IL0036188	Babcock & Wilcox	Rock River
IL0055166	O & H Foundry	Rock River
IL0060178	Sundstrand Corp-Aerospace Div.	Rock River
IL0061441	Pacific Scientific Mtr Ctl Div.	Rock River
IL0062049	Hollywood Dining Centre	Rock River
IL0064572	Amoco Oil Company	Not listed
IL0066737	Greenlee/Textron	Trib to Rock River
IL0067580	Suntec Industries, Inc.	Concrete Flume Trib to Rock River
IL0067989	Rockford Products Corporation	Rock River
IL0068284	Gunite Corporation-Rockford	Rock River
IL0070211	Sundstrand Corporation	Rock River via storm sewer

Table SE-3 lists the industrial sites within the Southeast watershed. This watershed has a high concentration of industrial sites that have the potential of adversely impacting local water quality

^{8, 10} 2007 Annual Report, City of Rockford Storm Sewer System, NPDES Permit No. ILS000001. Prepared by Baetis Environmental Services, Inc. for the City of Rockford.

as indicated below. Three CERCLA sites are listed within the watershed. These sites are: Southeast Rockford Ground Contamination located on 11th Street, Y Not Used Tire on Harrison Avenue, and Acme Solvent Reclaiming Inc. on 20th Avenue.¹⁰ Acme Solvent Reclaiming, Inc. and Y Not Used Tire are not included on the NPL; no site descriptions are reported for these sites on ‘Envirofacts’.¹¹

The Southeast Rockford Ground Water Contamination consists of a very large area of groundwater contamination approximately three square miles in size. Primary site contaminants are extremely high levels of chlorinated solvents in soil and groundwater; localized high groundwater concentrations of benzene, toluene, ethylbenzene, and xylene are also present.¹² Site investigations in the 1980s and 1990s revealed that chlorinated solvents, waste oils and fuels, paint sludges, tank bottoms, hospital wastes and general refuse were disposed of in this landfill. Cleanup activities and monitoring continue today

**Table SE-3
INDUSTRIAL SITES LOCATED WITHIN THE SOUTHEAST WATERSHED
ROCKFORD, ILLINOIS**

Name	Street	Land Use Code (LUC)	LUC Description
Alpine Softener Corp.	15 th Ave.	5000	Wholesalers & Retail Outlets
National Business & Industrial Ctr.	7 th St.	3400	Fabricated Metal Prod. (wet)
Rockford Process Control, Inc.	7 th St.	3400	Fabricated Metal Prod. (wet)
S & S Property Management	Harrison Ave.	4100	Transportation Services
Leading Edge Hydraulics	16 th Ave.	3400	Fabricated Metal Prod. (wet)
Viking Chemical Company	18 th Ave.	2800	Pnt. Chem. Oil & Grease – Mfg. & Reclm.
H.T. Gaston Corporation	12 th St.	3450	Fabricated Metal Prod. (dry)
Kenwood Electrical Systems, Ltd.	20 th Ave.	7000	Miscellaneous Services
Masters Plating Co., Inc.	20 th Ave.	3400	Fabricated Metal Prod. (wet)
Hamilton Sundstrand (Plant	11 th St.	3500	Machinery Mfg. (wet shop)

¹⁰ Source: U.S. EPA. Envirofacts website.

www.epa.gov/region5superfund/npl/illinois/ILT180011975.htm. Accessed 12/11/08.

¹¹ To avoid confusion the Acme Solvent Company’s Morristown Plant in Morrison, IL is a CERCLA site on the NPL. The Rockford site is not on the NPL.

¹² Source: U.S. EPA. Envirofacts website.

<http://www.epa.gov/region5/superfund/npl/illinois/ILD981000417.htm>. Accessed 12/11/08.

Name	Street	Land Use Code (LUC)	LUC Description
1)			
Spider Company, Inc.	11 th St.	3400	Fabricated Metal Prod. (wet)
Julian Ingram	11 th St.	4100	Transportation Services
Olson Aluminum Castings, Ltd.	15 th St.	3300	Foundries, Mills & Heat Treat
Haldex Hydraulics, Inc.	15 th St.	3500	Machinery Mfg. (wet shop)
International Paper	23 rd Ave.	2400	Wood Prods. (Lbr., Furn., Paper)
Dixon Automatic Tool (North Bldg.)	23 rd Ave.	3400	Fabricated Metal Prod. (wet)
ITW DC Products	23 rd Ave.	3400	Fabricated Metal Prod. (wet)
Dixon Automatic Tools (South Bldg.)	23 rd Ave.	3400	Fabricated Metal Prod. (wet)
Whitehead School	Ohio Pkwy.	8210	Educational Facilities – w/o Sp, FC.
PDR Enterprises, Inc.	17 th St.	4100	Transportation Services
John Kapotas	St.	6512	Office Bldg. – Shopping Center
Estwing Manufacturing	08th St. 8 th St.	3400	Fabricated Metal Prod. (wet)
Prochem, Inc. Int'l	Roosevelt Rd.	2800	Pnt. Chem. Oil & Grease – Mfg. & Reclm.
Interstate Pollution Control	Boeing Dr.	2800	Pnt. Chem. Oil & Grease – Mfg. & Reclm.
Delta Power Hydraulic	Boeing Dr.	3550	Machinery Mfg. (wet shop)
Freund International	Asche Ave.	4100	Transportation Services
Gates Rubber Company	Sandy Hollow Rd.	3400	Fabricated Metal Prod. (wet)
Ballard Electric	Electric Ave.	5000	Wholesalers & Retail Outlets
Amtec	Research Pkwy.	3000	Plastic Molding & Misc. Plastic Prod.
Gates Rubber Company	Sandy Hollow Rd.	3400	Fabricated Metal Prod. (wet)
Ballard Electric	Electric Ave.	5000	Wholesalers & Retail Outlets
Amtec	Research Pkwy.	3000	Plastic Molding & Misc. Plastic Prod.
Greenlee Textron	Research Pkwy.	3500	Machinery Mfg. (wet shop)
Freeway Rockford, Inc.	Boeing Dr.	3450	Fabricated Metal Prod. (dry)
Fitzgerald Equipment Co., Inc.	Boeing Dr.	5000	Wholesalers & Retail Outlets
A1 Wire Tech, Inc.	Kishwaukee St.	3400	Fabricated Metal Prod. (wet)

Name	Street	Land Use Code (LUC)	LUC Description
Kelley Williamson Co.	Sandy Hollow Rd.	5402	Convenience Food Store
Sherwin Williams Powder Coating	Technology Dr.	2800	Pnt. Chem. Oil & Grease – Mfg. & Reclm.
Todd Transit	Capitol Dr.	4100	Transportation Services
Transam Truck & Trailer	11th St.	4100	Transportation Services
Pearson Fastener Corporation	Samuelson Rd.	3400	Fabricated Metal Prod. (wet)
DB Metal Finishing	Samuelson Rd.	3400	Fabricated Metal Prod. (wet)
DB Metal Finishing	Easy St.	3400	Fabricated Metal Prod. (wet)
Aaro Roller Corp.	11th St.	3400	Fabricated Metal Prod. (wet)
Gottman's	American Rd.	4100	Transportation Services
Swan Hillman School	Greendale Dr.	8210	Educational Facilities – w/o Sp, FC.
Hamilton Sundstrand 6,7,8	Harrison Ave.	3500	Machinery Mfg. (wet shop)
Rockford Fabricating	27th Ave.	3450	Fabricated Metal Prod. (dry)
Northern IL Hospital Services	American Rd.	7218	Laundries & Cleaners - Industrial
Septran	American Rd.	4100	Transportation Services
Abbott Plastics & Supply Co.	Longergran Dr.	3000	Plastic Molding & Misc. Plastic Prod.
Painted Parts, Inc.	Hydraulic Rd.	3400	Fabricated Metal Prod. (wet)
Timmer Printing	Hydraulic Rd.	7334	Printers
Jones Natural Chews, Inc.	Pyramid Dr.	2000	Food & Related Products
Owens Corning Sales, LLC.	Laude Dr.	2800	Pnt. Chem. Oil & Grease – Mfg. & Reclm.

Existing Drainage Network

Drainage within the South East watershed occurs through a mix of surface drainage paths, storm sewers, and channels. In the less developed northeastern part of the watershed, surface drainage is the primary mode of stormwater conveyance. The southwestern and central portions of the South East watershed are drained by extensive networks of storm sewers as shown in Figure SE-2. A secondary channel in this area also provides drainage through backyard swales and an underdrain system located between Jonquil Place and Brookview Road. These differences in drainage mechanisms are analogous with the respective development in these sections of the watershed.

Figure SE-2 also shows the general location of identified detention basins and storm sewer outfalls within the South East watershed. The South East watershed has 13 identified detention

facilities. These facilities are distributed through the central and southeastern part of the watershed. The 53 identified storm sewer outfalls within the watershed are located generally along the upstream reaches of the Ditch with a small number in the area south of Sawyer Rd. along what appears to be a surface drainage path.

Available Data Resources

Previous Drainage Studies

A review of available data identified no recent, comprehensive studies of drainage issues within the South East watershed.

“Harmon Park Drainage Basin Evaluation: Capital Investment Plan.” Willet Hofman & Associates, Inc. August 2008.

Historic Flow Data

No source of historic flow data has been identified for the South East watershed.

Historic Water Quality Data

No source of historic water quality data has been identified for the South East watershed. (pending input from David Pott)

Other

Soil Characteristics:

“Soil Survey Geographic (SSURGO) database for Winnebago County, Illinois.”

Fort Worth: U.S. Department of Agriculture, Natural Resources Conservation Service, 2007.
URL:<<http://SoilDataMart.nrcs.usda.gov/>>

“Rockford and Cherry Valley Flood of 8/6/07 – 8/7/07 Surveillance Report.” Illinois Department of Natural Resources: Office of Water Resources, September 2007.

Drainage Issues

Table SE-1 (on the following page) provides a summary listing of current identified drainage issues and projects within the South East watershed. The general locations of these issues and projects are shown on Figure SE-1.

The most significant stormwater management/flood control problem in the South East Watershed is the dilapidated state of current drainage infrastructure. As a result, this area of the City suffers from poor drainage. The City is interested in implementing a drainage program. This program would need to consist of appropriate drainage infrastructure ranging from simple earthen ditches

to sewerage. Many existing roadside ditches are clogged and ineffective. This area also encompasses a relatively lower income population and often residents do not report flooding incidents to the City for wariness of their increased attention.

The City also realizes the need for maintenance along the Ditch in the portion between 20th and Cleveland. The creek was converted to a 25-foot wide concrete lined channel in the 1970's with the exception for a small stretch between Alpine to 20th Street. This concrete portion is in dire need of repair and regular maintenance. The channel bottom is severely eroded, resulting in broken concrete and exposed rebar.

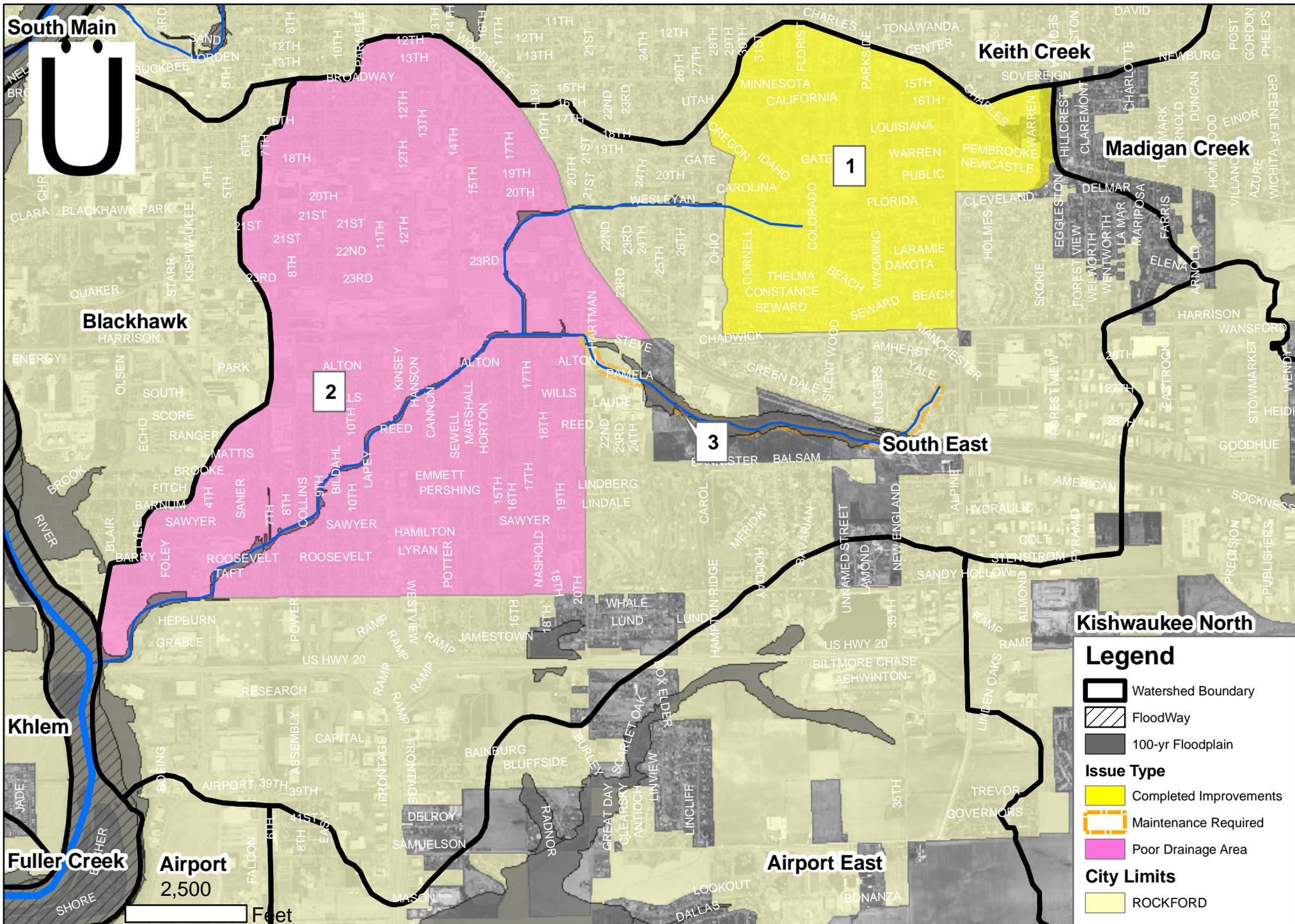
The City commissioned a study and Capital Improvement Plan to be developed for the Harmon Park area in the northeastern corner of the South East watershed. They developed a 10 year plan to address stormwater detention and conveyance needs in that area.

**Table SE-4
 SUMMARY OF STORMWATER/FLOOD CONTROL ISSUES AND PROJECTS
 SOUTH EAST WATERSHED, ROCKFORD, ILLINOIS**

#	Brief Description of Issue	Issue Type				Action			
		Over-bank Flooding	Major Surface Flooding	Localized/Nuisance Flooding	Water Quality Impacts	Improvements Completed	Maintenance Required	Future Projects	Proposed Project
1	Harmon Park Drainage Study (E Gate and W Gate Parkway) - Study performed by Willett Hofmann & Associates, Inc.								•
2	A heavily urbanized and poorly drained area with a nonexistent storm sewer or ditch infrastructure. City would like to replace dilapidated roads and install a stormwater management system.							•	
3	20th Street to Cleveland Avenue - Creek was converted to a 25-foot wide concrete lined channel in the 1970's with the exception for a small stretch between Alpine to 20th Street. The concrete portion is in need of heavy maintenance. The channel bottom is severely eroded with broken concrete and exposed rebar.					•			

Table SE-5
SUMMARY LISTING – LETTERS OF MAP CHANGE
SOUTH EAST WATERSHED, ROCKFORD, ILLINOIS

Flooding Source	Community	Date Issued	Type
Unnamed Tributary to Rock River	Winnebago County	6/2/2003	LOMR



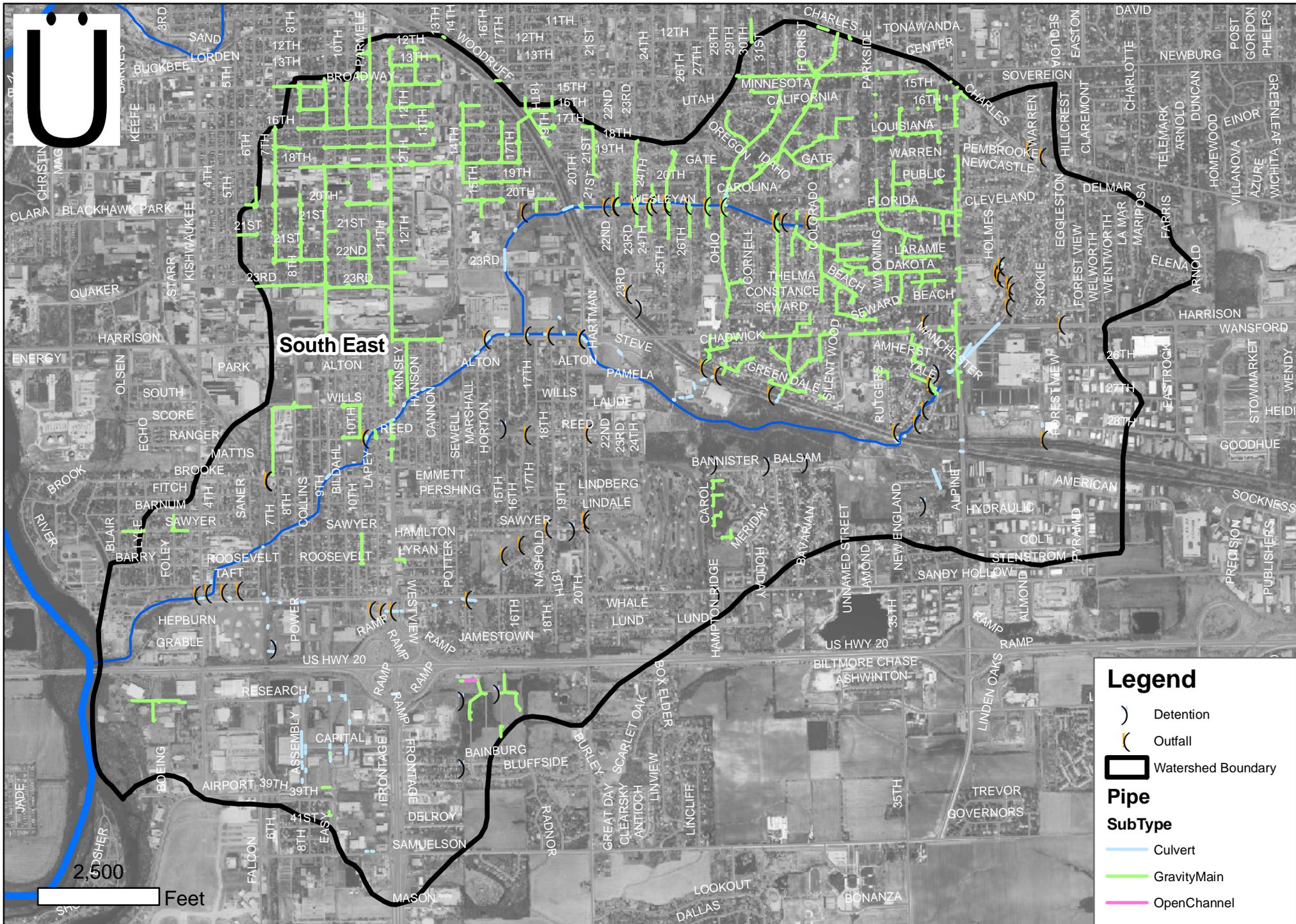


Figure SE - 2

South East Outfalls, Detention and Storm Sewer
 City of Rockford, Illinois
 Current Data as of Autumn 2008