

Airport East Watershed Assessment

Introduction

Material presented in the following summary documents current stormwater management and flooding issues for the Airport 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 Airport East watershed is located in the southern part of the City of Rockford on the east side of the Rock River. The watershed drains approximately 3,700 acres at its mouth. Roughly 50% of the watershed is located within the City of Rockford. The remaining 50% of the watershed extends very slightly into New Milford and mostly in unincorporated Winnebago County. The watershed extends east of 35th Street to the Greater Rockford Airport, where the ditch is enclosed in a 10-ft x 10-ft box culvert and conveyed under the airport to the Kishwaukee River.

Watershed Statistics: Airport Ditch	
Total Area:	3,700 ac.
Total Area within City:	1,860 ac.
% of City within Watershed:	4.7%
Other Stakeholders:	New Milford
No. of Detention Facilities	13
No. of Outfalls	2

The Airport East watershed is about 70% developed. The majority of the current development has occurred in the west and central portions of the watershed. Though predominantly residential, the Airport Ditch watershed also contains some industrial, commercial developments and agricultural land. The City anticipates that development will extend to the relatively undeveloped eastern portion of the watershed area within the City limits in the coming years.

Topography and Soils

Ground elevations within the watershed range from about 868 feet 1988 North American Vertical Datum (NAVD) near Hampshire Close and Samuelson Road to about 709 feet NAVD at the upstream face of the 10-ft x 10-ft airport box culverts.

Soils within the Airport East watershed consist primarily of type B soils, with pockets of type D soils surrounding the creek bed. 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.¹³ The predominance of type B soils in the Airport 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

Airport East is the primary receiving stream for the Airport East watershed. Airport East consists of several branching tributaries, with the longest branch being approximately 24,150 feet (4.6 mi.) long. The Ditch and its tributaries exist in essentially a natural state. Airport East has a stream bed elevation of 709 feet (NAVD) at its mouth, and 847 feet (NAVD) at its origin. The creek is relatively steep, with an average fall of 30 feet per mile.

There are several small on-site detention basins and depressional storage areas located within the watershed area. The largest detention facility is located northwest of the intersection of 35th Street and Highway 20.

Airport East is currently mapped as regulatory Zone A floodplain, where the floodplain boundaries shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) are approximated. Detailed Flood Insurance Study (FIS) flow data and Base Flood Elevations (BFE's) are not available for Airport East. The watershed is currently being studied by MWH in support of obtaining a Letter of Map Revision (LOMR) from FEMA. The LOMR will establish detailed flow data and BFEs for the entire watershed area.

Water Quality and NPDES Discharges

Tributary and storm sewers draining this subbasin have not been sampled under the SCORE program, so no water quality data are available for the Airport East watershed.

One NPDES point source has been identified within the watershed (Table AE-1).

¹³ Burke, Christopher and Thomas Burke. HERPICC Stormwater Drainage Manual. West Lafayette, Indiana: Purdue Research Foundation, 1994.

**TABLE AE-1
 NPDES POINT SOURCES LOCATED WITHIN THE AIRPORT EAST WATERSHED
 ROCKFORD, ILLINOIS**

NPDES Permit #	Facility Name	Receiving Water
ILG840086	Rockford Sand and Gravel	Not listed

Runoff from industrial sites is a potential pollutant source for receiving waters. Table 2 lists the industrial sites within the Airport East watershed.

**TABLE AE-2
 INDUSTRIAL SITES LOCATED WITHIN THE AIRPORT EAST WATERSHED
 ROCKFORD, ILLINOIS**

Name	Street	Land Use Code	Description
Board of Education Froberg	20 th St.	8210	Educational Facilities w/o SP, FC
Slidematic	Samuelson Rd.	3400	Fabricated Metal Prod. (wet)
Rockford Toolcraft	11 th St.	3450	Fabricated Metal Prod. (dry)
All Rental Garment Company	11 th St.	7218	Laundries & Cleaners - Industrial
SPX Fluid Power	11 th St.	3500	Machinery Mfg. (wet shop)
Bergstrom, Inc.	Blackhawk Rd.	3700	Transportation Equipment
Rockford Meat Company	9 th St.	5400	Full Service Grocery Store
Fox Development	Colony Bay	6512	Office Bldg. - Shopping Center
Ryder Trucks	Merchandise Dr.	4100	Transportation Services
Chicago-Rockford International Airport	Airport Dr.	-	Transportation Services

The Chicago-Rockford International Airport is located within the Airport East watershed. Airport operations, particularly deicing activities, can have a negative impact on water quality. The Federal Aviation Administration (FAA) requires that aircraft surfaces be deiced to ensure the safety of passengers. When deicing is performed without protection and prevention measures in place, it can contribute to contamination of ground water and surface water supplies. The most common deicing agents, ethylene or propylene glycol, can be harmful to aquatic life due to high biological oxygen demand (BOD) resulting in depletion of oxygen. These agents also exhibit

toxicity to mammals, including humans. Deicing agents often contain additives such as corrosion inhibitors, flame retardants, pH buffers, etc. When glycols are combined with the additives in deicing fluids the result can be significantly more toxic to the aquatic environment than when glycols alone are present.¹⁴ Mammalian toxicities are also greater when glycols are used with additives. Unless deicing agents are captured after use and treated, they may leach into groundwater, runoff into surface waters, or enter storm sewer drains adversely impacting the aquatic environment.

Storm water management and deicing procedures at the Chicago-Rockford International Airport have not been investigated for this report. It is recommended that this information be collected due to the potential for water quality impacts.

Existing Drainage Network

Drainage within the Airport East watershed occurs through a mix of surface drainage paths, storm sewers, and creek channels. Throughout most of the watershed, surface drainage and channelization is the primary mode of stormwater conveyance. As shown on Figure AE-1, portions of the central watershed are drained by networks of storm sewers.

Figure AE-2 also shows the general location of identified detention basins and storm sewer outfalls within the Airport East watershed. The Airport East watershed has 13 identified detention facilities. These facilities are distributed through the central parts of the watershed, mostly north of Samuelson. The 2 identified storm sewer outfalls within the watershed are located on Sandy Hollow Road.

Available Data Resources

Previous Drainage Studies

A review of available data identified no recent, comprehensive studies of drainage issues within the Airport East watershed. Previous drainage studies that included consideration of the watershed are listed below:

“Greater Rockford Airport Authority Master Drainage Study Preliminary Report (Phase 1).” Crawford, Murphy, and Tilly, Inc. October 1993.

“A Master Drainage Plan for the Rockford Regional Area: Rockford-Winnebago County Regional Drainage Plan and Study.” Espey, Huston & Associates, Inc. November 1981.

¹⁴ U.S. Environmental Protection Agency. 2002. *Source Water Protection Practices Bulletin. Managing Aircraft and Airfield Deicing Operations to Prevent Contamination of Drinking Water.* Office of Water. EPA 816-F-02-018.

Historic Flow Data

No source of historic flow data has been identified for the Airport Ditch watershed.

Historic Water Quality Data

No source of historic water quality data has been identified for the Airport Ditch watershed.

Other

Floodplain and Floodway:

Flood Insurance Study: Winnebago County and Incorporated Areas, (FEMA, 2006)

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/>>

Drainage Issues

Table AE-3 (on the following page) provides a summary listing of current identified drainage issues and projects within the Airport East watershed. The general locations of these issues and projects are shown on Figure AE-1.

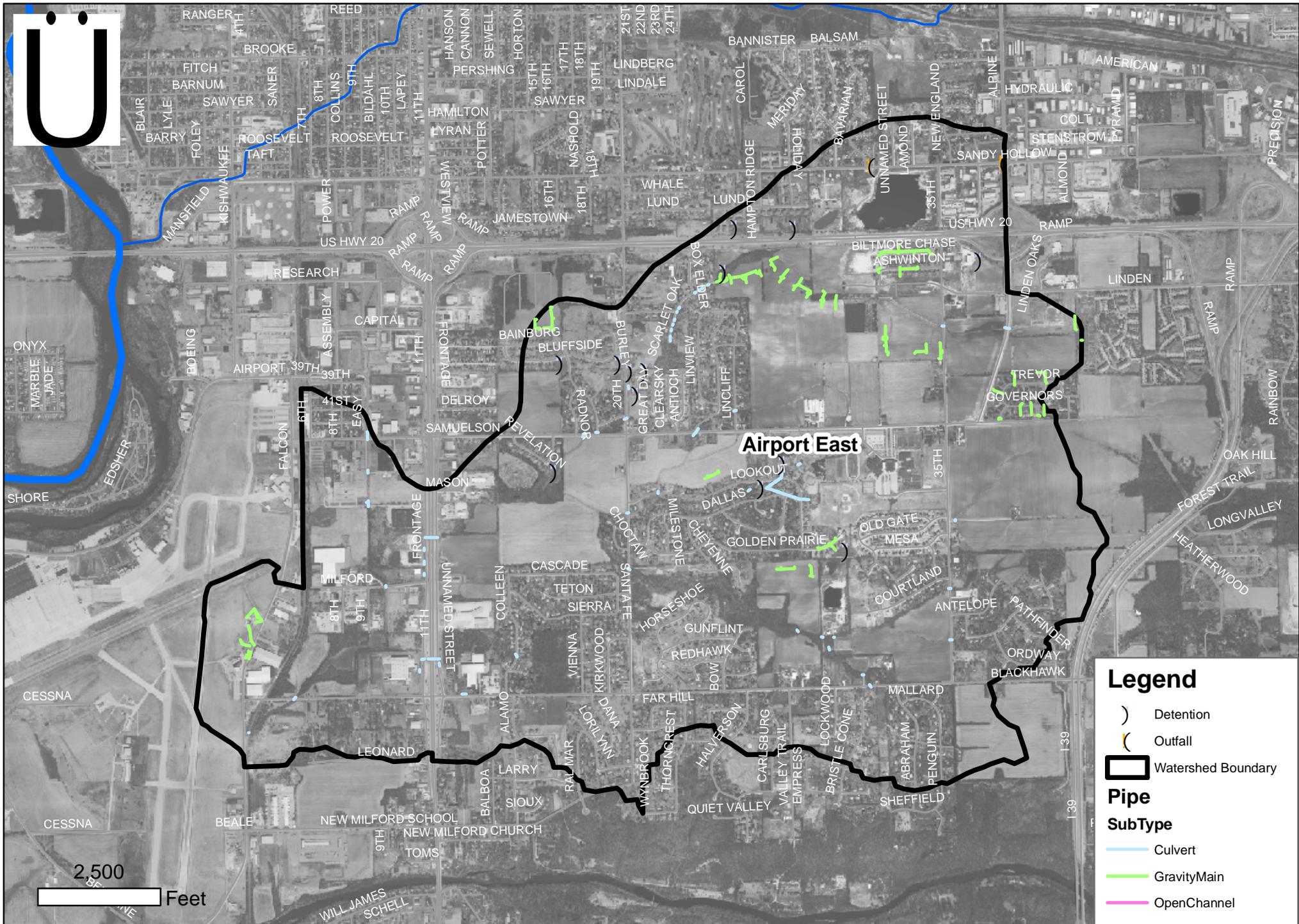
To date, there have been few reports of flooding in the Airport East Watershed. With the opportunity for increased development within the watershed, future localized flooding along the ditch may be aggravated by the number of small culverts, vegetative debris and trees along the stream channel. The City should be proactive in its efforts to preclude future development activities that development provides a near-term opportunity for consideration of measures to reduce stormwater runoff impacts and/or flooding vulnerability.

Once the LOMR has been granted for Airport East, it is imperative that residential and other vulnerable development not occur within the floodplain areas without compensation. Where construction within a floodplain is warranted, appropriate compensatory storage must be provided. Consistent application of these principles will reduce the potential for future increases in flooding and flood-related damages, and the need for costly flood control projects.

The City has identified several areas where there is a higher occurrence of localized flooding. Further evaluation of site-specific stormwater management/flood control improvement needs is required to provide a basis for effective planning, budgeting, and prioritization of potential projects.

**Table AE-3
 SUMMARY OF STORMWATER/FLOOD CONTROL ISSUES AND PROJECTS
 AIRPORT 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 Project	Proposed Project
1	Camp Grant Army Barracks - The site has very flat topography and lacks storm sewers. To improve area drainage, ditch regrading will be required.							•	
2	Milford Avenue and 11th Street - The large culverts under 11th Street at Milford are not being utilized. The Packard Development is proposing regrading the channel upstream and reroute flow to these culverts. Project currently under review by the City and IDNR-OWR.							•	
3	NE of Chesterfield Avenue and Blackwell Drive - Resident reports experiencing backyard flooding			•					



Legend

- Detention
- Outfall
- Watershed Boundary

Pipe

SubType

- Culvert
- GravityMain
- OpenChannel



Figure AE - 2

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