

FLOOD INSURANCE STUDY



VOLUME 1 of 3

BROWN COUNTY, WISCONSIN AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
ALLOUEZ, VILLAGE OF	550612
ASHWAUBENON, VILLAGE OF	550600
BELLEVUE, VILLAGE OF	550627
BROWN COUNTY (UNINCORPORATED AREAS)	550020
DE PERE, CITY OF	550021
DENMARK, VILLAGE OF*	550616
GREEN BAY, CITY OF	550022
HOBART, VILLAGE OF	550626
HOWARD, VILLAGE OF	550023
PULASKI, VILLAGE OF	550024
SUAMICO, VILLAGE OF	550660
THE ONEIDA NATION OF WISCONSIN	550379
WRIGHTSTOWN, VILLAGE OF	550025



*No Special Flood Hazard Areas Identified

REVISED
MARCH 17, 2014



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
55009CV001B

Brown County, Wisconsin
and Incorporated Areas

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this Preliminary FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision (LOMR) process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult community officials and check the Community Map Repository to obtain the most current FIS components. Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways and cross sections). In addition, former flood hazard zone designations have been changed as follows.

<u>Old Zone(s)</u>	<u>New Zone</u>
A1 through A30	AE
B	X (shaded)
C	X

Initial Countywide FIS Effective Date: August 18, 2009

Revised Countywide FIS Effective Date: March 17, 2014

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FLOOD INSURANCE STUDY
BROWN COUNTY, WISCONSIN AND INCORPORATED AREAS

1.0 **INTRODUCTION**

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Brown County, Wisconsin; including the Cities of De Pere and Green Bay, and the Villages of Allouez, Ashwaubenon, Bellevue, Hobart, Howard, Pulaski, Suamico, Wrightstown, The Oneida Nation of Wisconsin, and the unincorporated areas of Brown County (hereinafter referred to collectively as Brown County). Please note that The Oneida Nation of Wisconsin, and Villages of Howard and Wrightstown are geographically located in Brown and Outagamie Counties. The Village of Pulaski is geographically located in Brown, Oconto, and Shawano Counties. This FIS does not include portions of those communities located outside of Brown County. For flood hazard information in adjacent counties, please see separately published FIS reports and Flood Insurance Rate Maps (FIRM).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by Brown County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that the Village of Denmark is non-floodprone.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence, and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Hydrologic and hydraulic analyses for that part of Lake Michigan/Green Bay within Brown County are based on the U.S. Army Corps of Engineers (USACE) Detroit District, Revised Report on Great Lakes Open-Coast Flood Levels, dated 1988, with new coastal analyses performed by Dewberry, completed in April 2003.

The hydraulic analysis for The East River from Green Bay to County Trunk Highway ZZ was prepared by the USACE, Detroit District, for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-89-E-3218, Project Order No. 1. That work was completed in September 1990. No new hydrology was developed on the East River for the restudy.

The hydrologic and hydraulic analyses for Dutchman Creek from its mouth to a point approximately 1.5 miles upstream of Circle Drive were performed by the USACE, Detroit District, for FEMA under Inter-Agency Agreement No. EMW-88-E-2768, Project Order No. 4, on September 29, 1989.

The hydrologic and hydraulic analyses for Lancaster Brook (renamed Lancaster Creek) were performed by Owen Ayers & Associates in August 1991.

The hydrologic and hydraulic analyses for Unnamed Tributary A (renamed East River Tributary A) and Unnamed Tributary B (renamed East River Tributary B) were performed by Mead & Hunt, Inc., in June 1994.

For the original countywide FIS, new detailed and approximate hydrologic and hydraulic analyses and redelineation of special flood hazard areas were performed. The Wisconsin Department of Natural Resources (WDNR) studied or restudied the majority of the riverine flooding sources in Brown County under FEMA's Cooperating Technical Partner (CTP) program funds. This work was submitted on August 16, 2006. In addition, approximate analyses were performed by CDM Federal Programs Corporation (CDM), for FEMA under Contract No. HSFE05-05-D-0027/TO09. The WDNR and CDM analyses were completed by using the revised digital terrain data dated September 2004, provided by the Brown County.

The digital base mapping information was provided in digital format by Brown County. This information was derived from data compiled in 2005 acquired by the National Imagery Program (NAIP). These data meet or exceed National Mapping Accuracy Standards. Users of this FIS should be aware that minor adjustments may have been made to specific Flood Insurance Rate Map (FIRM) base map features.

For this FIS, The original countywide study is revised to include the results of Letter of Map Revision (LOMR) 10-05-4875P, impacting the Base Flood Elevations (BFEs) for Trout Creek. Based on this information, the redelineation of special flood hazard areas were performed by STARR under Risk Map Contract No. HSFEHQ-09-D-0370 Task Order No. HSFE05-11-J-0090 . This work was completed in October 2012.

The digital base mapping information for the revised areas were provided in digital format by Brown County. The LOMR was issued on September 22, 2010. This information has been completed This information was derived from data compiled in 2010 acquired by the NAIP. These data meet or exceed National Mapping Accuracy Standards. Users of this FIS should be aware that minor

adjustments may have been made to specific Flood Insurance Rate Map (FIRM) base map features.

The coordinate system used for the production of this FIRM is Universal Transverse Mercator (UTM) Zone 16 North, North American Datum of 1983 (NAD 83), GRS 80 spheroid. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

1.3 Coordination

An initial Consultation Coordination Officer's (CCO) meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held with representatives from FEMA, the community, and the study contractor to review the results of the study.

On February 23, 1989, an initial CCO meeting was held with representatives of FEMA, the WDNR, Brown County, the City of Green Bay, the Village of Howard, and the USACE.

An additional scoping meeting was held on May 8, 2002, with representatives of FEMA, Dewberry, WDNR, Brown County, the City of Green Bay, local community officials, and The Oneida Nation of Wisconsin.

During the search for basic data, contacts were made with the WDNR, Hydrologic Studies Unit, Bureau of Water Zoning and Regulation; Brown County; the City of Green Bay; and the Wisconsin Highway Commission. Results of the technical aspects of this FIS were coordinated with, reviewed, and approved by the WDNR. On July 15, 2004, a "pre-preliminary" meeting was held in Brown County to give the State and community officials an advance look at the new map product which included the results of the Green Bay coastal study as well as the riverine studies.

On April 22, 2005, FEMA Region V met with representatives of The Oneida Nation of Wisconsin. The purpose of the meeting was to discuss the countywide mapping process as well as various aspects of the NFIP and other FEMA programs.

On August 15, 2007, the results of the original countywide FIS were reviewed at a final coordination meeting attended by representatives of the FEMA, WDNR, the communities, The Oneida Nation of Wisconsin, and CDM.

The results of this countywide revision reviewed at the final CCO meeting held on April 15, 2013, and attended by representatives of FEMA, WDNR, STARR and the communities. All problems raised at that meeting have been addressed in this study.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Brown County, Wisconsin.

The following flooding sources were studied by detailed methods:

TABLE 1 – FLOODING SOURCES STUDIED BY DETAILED METHODS

Ash Street Tributary to Lancaster Creek	Fox River
Ashwaubenon Creek	Green Bay
Ashwaubenon Creek (Middle)	Lancaster Creek
Ashwaubenon Creek (Upper)	Lancaster Creek Tributary Mahon Creek
Baird Creek	Middle Branch Little Suamico River
Baird Creek Tributary	Neshota River
Baird Creek Tributary 6	North Branch Ashwaubenon Creek
Bakers Creek	North Branch Bakers Creek
Bakers Creek Tributary	North Branch Willow Creek
Barina Creek	North Tributary South Branch Ashwaubenon Creek
Beaver Dam Creek	Oneida Creek
Bower Creek	Pioneer Tributary to Duck Creek
Bower Creek Tributary	Plum Creek
Bower Creek Tributary A	Sorensens Creek
Bower Creek Tributary B	Sorensens Creek Tributary
Bower Creek Tributary 1	South Branch Ashwaubenon Creek
Bower Creek Tributary 2	South Branch Little Suamico Creek
Branch Plum Creek	South Tributary to Willow Creek
Branch Plum Creek- Lower Tributary	Spring Creek
Branch Plum Creek- Upper Tributary	Spring Creek Tributary A
Branch River	Spring Creek Tributary A Ditch
Duck Creek	Spring Creek Tributary B
Duck Creek Tributary – Stream 11	Suamico River
Duck Creek Tributary 12	Tributary 1 to Dutchman Creek Southwest Tributary
Dutchman Creek	Tributary 2 to Dutchman Creek Southwest Tributary
Dutchman Creek North Tributary	Tributary 3 to Dutchman Creek Southwest Tributary
Dutchman Creek South Tributary	Trout Creek
Dutchman Creek Southeast Tributary	Unnamed Tributary to Green Bay
Dutchman Creek Southwest Tributary	Vanguard Way Tributary to Lancaster Creek
East River	West Verlin Tributary to Willow Creek
East River Tributary	Willow Creek
East River Tributary A	
East River Tributary B	
East Verlin North Tributary to Willow Creek	
East Verlin Tributary to Willow Creek	
Ellis Creek	

Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2). The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction.

All or portions of the Apple Creek, Ashwaubenon Creek and Tributaries, Baird Creek, Bower Creek and Tributaries, Branch River and Tributaries, Duck Creek, East River and Tributaries, Haller Creek, Mahon Creek, Neshota River, Plum Creek and Tributaries, Potter Creek, Suamico River, North Branch Suamico River, Little Suamico River, North and South Pulaski River Tributaries, Spring Creek Tributary A and several unnamed tributaries are studied with approximate analyses. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to and agreed upon by FEMA and the county.

This revised countywide analyses introduced new BFEs and the special flood hazard areas for Trout Creek from its confluence with Duck Creek to Sunlite Drive.

2.2 Community Description

Brown County is located in eastern Wisconsin, on the western shore of Lake Michigan. It is bordered by Oconto County to the north, Shawano and Outagamie Counties to the west, Calumet and Manitowoc Counties to the south, and Kewaunee County to the east. The City of Green Bay is the county seat. The population of Brown County was estimated to be 248,007 in 2010 and 226,778 in 2000 by the U.S. Department of Commerce, Bureau of the Census.

The climate of Brown County is characterized by weather that is common for its latitude. The nearby waters of Green Bay, Lake Michigan, and Lake Winnebago exert a strong modifying influence on the climate. July is normally the warmest month, with a mean monthly temperature of 70 degrees Fahrenheit (°F); January is the coldest month, with a mean monthly temperature of 16°F (Wisconsin Department of Natural Resources, 1972). Precipitation from May through September amounts to over one-half of the mean annual precipitation. The average annual snowfall is approximately 40 inches. Prevailing winds are from a southwesterly direction most of the year, except from March through May, when northeasterly winds prevail.

The soil types are generally derived from glacial till and outwash deposits. They are basically rich, heavy soils common to the rolling countryside and are well-suited for agricultural use. A soil survey report is available for the county (U.S. Department of Agriculture, 1974).

Topography within the City of Green Bay is varied. In general, the most densely developed parts of Green Bay lie near the Fox and East Rivers, on land that slopes gently toward the river banks. West of Mahon Creek's mouth, much of the city's acreage along, or near, the bayshore consists of low-lying marsh. Gravel pits and

their surrounding areas near Baird Creek, as well as the area surrounding Duck Creek, comprise the city's more hilly terrain.

2.3 Principal Flood Problems

High stages of Green Bay are the primary source of flood problems, especially in the City of Green Bay. Because of the city's relatively flat topography along the bay between the mouths of the Fox River and Mahon Creek, substantial flooding has occurred in this area during high bay stages. These high water stages also cause increases in the water-surface elevations near the mouths of the Fox and East Rivers.

For the streams studied, the majority of major floods have occurred in the early spring and summer due to the spring rains and snowmelt, however, the history of flooding in the region indicates that significant floods can occur throughout the year. River stages have experienced significant rises due to intense rainfall, rapid thawing of ice and snow, and ice jams. Extensive flooding has occurred along the East River, most recently in June 1990. The East River has also been subject to flooding at various times in the past. Floods have occurred in 1914, 1929, 1952, 1966, and 1969, as well as during other periods. The February 1966 flood was historically the worst flood not directly related to high water in the bay.

The worst flooding in recent history occurred in April 1973, as high levels on Lake Michigan and northeasterly winds created hazardous conditions on Green Bay. Considerable damage was incurred by shoreline property, especially along the western shore of Green Bay. This area included residents along Lake Michigan and the Fox and Suamico Rivers. Damages in the county were estimated at \$6 million.

Major flooding also occurred during a storm in April 1952, resulting in approximately \$1 million in flood damages. Although flood levels were reached in 1986, no major flood occurred.

A notable recent flooding occurred in July 2010. Heavy rainfall caused Apple Creek to rise about 2.5 feet above flood stage at the Apple Creek Campground. Brown County officials had to evacuate 28 people from the campground where water was up to 5 feet deep.

2.4 Flood Protection Measures

The City of Green Bay has enacted several regulatory devices to control development within the city's floodplains. Conservancy districts, in which development is limited to agriculture and related land uses, have been established by the city. Present conservancy areas include Beaver Dam Creek, South Branch Ellis Creek, Baird Creek, Mahon Creek, Oneida Creek, Nicholson Creek, and Barina Creek.

Additionally, a floodplain zoning district along the East River and Baird Creek, extending as far as Baird Creek Road, has been established by the City of Green Bay in cooperation with the WDNR. The city has also established a minimum building elevation district, which extends along the bayshore and up the Fox River.

Following the disastrous storm and subsequent flooding in April 1973, a temporary dike, approximately 2.25 miles in length, was constructed along the City of Green Bay's northeast shore. The dike, which protects the low-lying shore from wave runoff, was constructed as part of the USACE Operation Foresight, an emergency flood protection program. Several industries near the bay and along the Fox and East Rivers have also constructed their own dikes to minimize flood damages (Milwaukee Journal, 1973).

As an additional flood damage reduction measure, several storm water pumping stations have been constructed by the city.

Although locks and dams are located on the Fox River throughout the county, they were constructed only for navigational purposes and do not provide any flood protection.

No flood control structures are located on any other stream studied within the unincorporated areas of the county, or within Green Bay or Howard.

3.0 **ENGINEERING METHODS**

For the flooding source studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this FIS. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent annual chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 1-percent annual chance flood in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this FIS. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency and elevation-frequency relationships for each flooding source studied in detail affecting the community.

For the East River and Baird Creek, 1-percent annual chance flood discharges were previously developed in a Flood Plain Information Report (USACE, 1972). To determine the 10-percent and 2-percent annual chance recurrence interval flows, 24-hour rainfall data obtained from Technical Paper No. 40 were used to enter 2-hour values, in critical order, into a HEC-1 rainfall-runoff computer model of the East River basin (U.S. Department of Commerce, 1963; USACE, 1981). Discharges for the 0.2-percent annual chance recurrence interval flood were determined by straight-line extrapolation of a log-log graph of flood discharges computed for recurrence intervals up to 100 years.

For the Fox River, peak discharge-frequency relationships were taken from a published Flood Plain Information Report (USACE, 1974). The discharges at the Rapide Croche Dam were obtained by the log-Pearson Type III analysis of flow records and study of historical flood events (U.S. Water Resources Council, 1967).

For the Neshota River, Ashwaubenon Creek, Plum Creek, the Suamico River, Middle Branch Little Suamico River, South Branch Little Suamico River, Branch River, Duck Creek, and Beaver Dam Creek, the hydrologic methods used to determine discharges included Soil Conservation Service hydrologic criteria, comparison with other streams within the region, and statistical regression equations (U.S. Department of Agriculture, 1972; U.S. Geological Survey, 1981). For Unnamed Tributary A and Unnamed Tributary B, peak discharges were obtained using TR-55 (U.S. Department of Agriculture, 1986).

For Trout Creek discharges were computed at four locations, as shown in Table 2, by comparison to Duck Creek and East River, SCS hydrologic criteria (U.S. Department of Agriculture, 1970) and D.H. Conger's statistical regression equation (D.H. Conger, 1971). The SCS discharges and drainage area computations were almost identical and therefore were used.

For Willow Creek, First North Branch Willow Creek, and North Branch Willow Creek, the peak discharges were obtained using TR-20 with 100% developed conditions.

For Lancaster Creek, peak discharges were obtained using TR-20 and calibration to the flood of June 22, 1990; peak discharges were modified as a result of the aforementioned corrections (U.S. Department of Agriculture, 1965).

For the flooding sources studied or restudied by the WDNR, the majority of the hydrology was taken from internal WDNR project files. For the flooding sources studied by CDM with approximate methods, discharges were calculated from the regression equations outlined in the USGS document "Flood-Frequency Characteristics of Wisconsin Streams. The attributes of watershed area and forest cover needed for use in the regression equations were determined in GIS using ArcGIS Spatial Analyst Extension and ArcHydro Tools in conjunction with the USGS canopy cover raster.

A summary of the drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 2, "Summary of Discharges."

TABLE 2 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ASH STREET TRIBUTARY TO LANCASTER CREEK At U.S. Route 1	0.5	*	*	186	*
ASHWAUBENON CREEK At mouth	28.1	2,000	2,625	2,900	3,540
At County Trunk Highway F	24.3	1,800	2,475	2,650	3,240
ASHWAUBENON CREEK MIDDLE BRANCH At Southbridge Road	18.9	*	*	2,500	*
ASHWAUBENON CREEK UPPER BRANCH At Williams Grant Drive	10.1	*	*	2,160	*
NORTH BRANCH ASHWAUBENON CREEK At mouth	4.4	*	*	870	*
NORTH TRIBUTARY SOUTH BRANCH ASHWAUBENON CREEK At mouth	1.0	*	*	350	*
SOUTH BRANCH ASHWAUBENON CREEK At mouth	5.4	*	*	1,290	*

TABLE 2 – SUMMARY OF DISCHARGES - continued

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (sq. miles)</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-PERCENT</u>	<u>2-PERCENT</u>	<u>1-PERCENT</u>	<u>0.2-PERCENT</u>
BAIRD CREEK					
At mouth	26.7	1,750	2,200	2,400	2,800
At Danz Avenue	18.0	1,630	2,045	2,230	2,600
At Green Bay and Western Railroad	16.9	1,330	1,670	1,825	2,130
At Huron Road	12.5	*	*	1,500	*
Northview Road	11.0	*	*	1,415	*
BAIRD CREEK TRIBUTARY					
At mouth	2.8	*	*	790	*
BAKERS CREEK					
At Belmont Road	0.9	*	*	388	*
BAKERS CREEK TRIBUTARY					
At Velp Avenue	1.0	*	*	245	*
NORTH BRANCH BAKERS CREEK					
At mouth	0.2	*	*	189	*
BARINA CREEK					
At Church Road	1.1	87	*	296	*
BEAVER DAM CREEK					
At mouth	7.8	750	1,100	1,285	1,740
Highway 54	3.2	590	790	960	1,300
BRANCH RIVER					
Project Limit Sect. 22 and 27	29.3	1,700	2,900	3,500	5,150
CTH G Project Limit	18.7	1,400	2,400	2,850	4,200
BOWER CREEK					
At Mouth	41.8	*	*	8,272	*
At CTH GV	34.2	*	*	5,000	*
At Lime Kiln Road	19.6	*	*	4,737	*
BOWER CREEK TRIBUTARY 1					
At Bower Creek Road	3.9	*	*	1,027	*
BOWER CREEK TRIBUTARY 2					
At Bower Creek Road	0.2	*	*	280	*

TABLE 2 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BOWER CREEK TRIBUTARY A At Tordeur Road	1.7	*	*	952	*
BOWER CREEK TRIBUTARY B At mouth	1.1	*	*	683	*
BRANCH PLUM CREEK At CTH CE	3.3	*	*	900	*
BRANCH PLUM CREEK - LOWER TRIBUTARY At mouth	0.3	*	*	279	*
BRANCH PLUM CREEK - UPPER TRIBUTARY At mouth	0.3	*	*	138	*
DUCK CREEK At mouth	151.0	4,200	5,800	6,500	9,200
Vicinity of Howard	128.9	3,830	5,310	5,910	8,300
Just upstream of confluence of Trout Creek	113.5	3,590	4,980	5,550	7,790
DUCK CREEK TRIBUTARY 11 At mouth	0.6	*	*	340	*
DUCK CREEK TRIBUTARY 12 At mouth	0.2	*	*	140	*
DUTCHMAN CREEK At mouth	31.0	*	*	3,450	*
At Oneida Street	*	*	*	3,300	*
At Circle Drive	*	*	*	2,430	*
DUTCHMAN CREEK NORTH TRIBUTARY At mouth	2.8	*	*	1,150	*
DUTCHMAN CREEK SOUTH TRIBUTARY At Waube Lane	4.0	*	*	1,290	*

TABLE 2 – SUMMARY OF DISCHARGES - continued

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (sq. miles)</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-PERCENT</u>	<u>2-PERCENT</u>	<u>1-PERCENT</u>	<u>0.2-PERCENT</u>
DUTCHMAN CREEK SOUTHEAST TRIBUTARY At Main Street	2.9	*	*	615	*
DUTCHMAN CREEK SOUTHWEST TRIBUTARY At Main Street	2.2	*	*	805	*
TRIBUTARY 1 TO DUTCHMAN CREEK SOUTHWEST TRIBUTARY At mouth	0.3	*	*	140	*
TRIBUTARY 2 TO DUTCHMAN CREEK SOUTHWEST TRIBUTARY At mouth	0.2	*	*	154	*
TRIBUTARY 3 TO DUTCHMAN CREEK SOUTHWEST TRIBUTARY At mouth	0.1	*	*	236	*
EAST RIVER At mouth	147.0	5,000	7,000	7,900	10,000
At confluence of Bower Creek	107.2	3,500	4,800	5,600	7,700
At State Trunk Highway 32	53.7	1,250	2,250	2,700	3,750
At County Trunk Highway ZZ	46.3	1,050	1,950	2,300	3,200
EAST RIVER TRIBUTARY At CTH GV	1.2	*	*	700	*
EAST RIVER TRIBUTARY A Approximately 240 feet upstream of mouth	1.15	*	*	836	*

TABLE 2 – SUMMARY OF DISCHARGES - continued

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (sq. miles)</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-PERCENT</u>	<u>2-PERCENT</u>	<u>1-PERCENT</u>	<u>0.2-PERCENT</u>
EAST RIVER					
TRIBUTARY B					
Approximately 160 feet upstream of mouth	0.3	*	*	310	*
EAST VERLIN NORTH					
TRIBUTARY TO					
WILLOW CREEK					
At mouth	0.1	*	*	20	*
EAST VERLIN					
TRIBUTARY TO					
WILLOW CREEK					
At mouth	0.9	*	*	1,685	*
ELLIS CREEK					
At Van Beek Road	0.7	*	*	560	*
FOX RIVER					
At mouth	6,473	22,700	30,600	34,000	38,600
At confluence of Dutchman Creek	6,317	22,790	28,050	30,990	35,500
At confluence of Ashwaubenon Creek	6,285	22,400	27,500	30,340	35,000
At De Pere Dam	6,253	22,500	27,550	29,950	34,550
At Little Laukauna Lake and Dam	6,244	22,500	27,500	29,900	34,500
At confluence of Apple Creek	6,241	21,950	26,750	29,450	34,500
At confluence of Plum Creek	6,187	21,340	25,790	28,310	33,000
At Rapide Croche Dam	6,150	20,200	25,100	27,500	31,000
LANCASTER CREEK					
At mouth	12.4	715	1,290	1,500	2,200
Approximately 2,000 feet downstream of Velp Street	11.4	505	990	1,180	1,850
Approximately 400 feet upstream of Velp Street	10.9	400	890	1,070	1,700
Approximately 500 feet upstream of Cardinal Lane	10.3	305	770	940	1,500
Just downstream of Hillcrest	9.7	265	670	820	1,300

TABLE 2 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
LANCASTER CREEK TRIBUTARY					
At Rockwell Road	0.4	*	*	205	*
MAHON CREEK					
At Green Bay	3.0	*	*	1,300	*
At STH 54	2.0	*	*	980	*
At Spartan Road	0.9	*	*	530	*
NESHOTA RIVER					
At Brown-Manitowoc County Boundary	44.0	2,250	3,700	4,400	6,300
Project Limit	36.0	2,040	3,350	4,000	5,700
NORTH BRANCH WILLOW CREEK					
At confluence with Willow Creek	1.24	*	*	770	*
Mantiowoc Road bridge	1.11	*	*	717	*
At a point approximately 2.3 miles upstream from the confluence with Willow Creek	0.72	*	*	512	*
ONEIDA CREEK					
At mouth	0.8	*	*	500	*
PIONEER TRIBUTARY TO DUCK CREEK					
At mouth	0.1	*	*	110	*
PLUM CREEK					
At mouth	35.4	2,800	4,350	5,100	7,000
Just upstream of tributary	22.9	2,000	3,100	3,600	4,950
SORENSONS CREEK					
At mouth	7.8	*	*	1,777	*
At Klondike Road	4.9	*	*	1,176	*
SORENSONS CREEK TRIBUTARY					
At Klondike Road	2.3	*	*	1,442	*

TABLE 2 – SUMMARY OF DISCHARGES - continued

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (sq. miles)</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-PERCENT</u>	<u>2-PERCENT</u>	<u>1-PERCENT</u>	<u>0.2-PERCENT</u>
SOUTH BRANCH LITTLE SUAMICO RIVER					
Just upstream of Town Road	3.10	340	500	625	850
SPRING CREEK					
At Town Hall Road	5.8	*	*	4,737	*
At Manitowoc Road	2.9	*	*	2,202	*
At Huron Road	1.6	*	*	1,394	*
SPRING CREEK TRIBUTARY A					
At Manitowoc Road	1.8	*	*	560	*
SPRING CREEK TRIBUTARY A DITCH					
At Eaton Road	*	*	*	230	*
SPRING CREEK TRIBUTARY B					
At mouth	0.4	*	*	295	*
SUAMICO RIVER					
At mouth	73.5	1,650	3,200	4,050	6,450
Just upstream of Tributary at Suamico	62.8	1,500	2,850	3,650	5,800
At County Trunk Highway M	55.0	1,350	2,600	3,300	5,250
TROUT CREEK					
At mouth	12.7	700	1,300	1,600	2,450
At East-West Road	11.4	650	1,200	1,500	2,300
At North-South Road	6.4	500	900	1,100	1,700
Project Limit	2.7	300	550	700	1,050
UNNAMED TRIBUTARY TO GREEN BAY					
At mouth	0.3	*	*	175	*
VANGARD WAY TRIBUTARY TO LANCASTER CREEK					
	0.1	*	*	185	*

TABLE 2 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
WILLOW CREEK					
At confluence with East River	5.49	*	*	1,951	*
Just upstream of confluence of First North Branch Willow Creek	3.86	*	*	1,707	*
Hazen Road bridge	3.12	*	*	1,577	*
Interstate 43 bridge	1.50	*	*	812	*
Ontario Road bridge	0.69	*	*	362	*
SOUTH TRIBUTARY TO WILLOW CREEK					
At Bellevue Street	0.4	*	*	438	*
WEST VERLIN TRIBUTARY TO WILLOW CREEK					
	0.1	*	*	310	*

The coastal stillwater elevations were taken from a report prepared by the Detroit District of the USACE titled Great Lakes Wave Runup Study for Brown County, City of Green Bay, and Village of Howard, Wisconsin Flood Levels of Green Bay, dated February 1990. The report uses a National Oceanic and Atmospheric Administration (NOAA) gage in the City of Green Bay and the water level elevations developed from the USACE’s report titled Revised Report on Great Lakes Open-Coast Flood Levels, dated 1988 to interpolate values along the Green Bay shoreline. The water surface elevations are based on a Pearson Type III frequency distribution on long-term gage data.

The stillwater elevations for the 10-percent, 2-percent, 1-percent, and 0.2-percent annual chance storms for the flooding sources studied by detailed methods and are summarized in Table 3, “Summary of Stillwater Elevations.” Wave setup was not computed for Green Bay and is not included in Table 3. Due to the low wave energy in Green Bay wave setup is taken to be negligible.

TABLE 3 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet NAVD*)			
	10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
GREEN BAY				
Suamico	584.0	585.1	585.5	586.5
Village of Howard	584.0	585.1	585.6	586.5
City of Green Bay	584.1	585.2	585.7	586.7
Scott	583.9	585.0	585.6	586.5
Green Bay	583.7	584.9	585.4	586.6

*North American Vertical Datum of 1988

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Cross-section and transect data for the hydraulic analyses were obtained from backup data for previous FISs and by field surveys completed in October 1989 (U.S. Department of Housing and Urban Development, 1992; U.S. Department of Housing and Urban Development, 1984; FEMA, August 17, 1981). For the original study, bridges and culverts existing at the time of the study were surveyed to obtain elevation data and structural geometry.

Water-surface elevations for riverine flooding sources were computed using the USACE HEC-2 step-backwater computer program (USACE, 1984), except for where otherwise noted.

The water-surface elevations for the Fox River at the City of Green Bay corporate limits were provided by the USACE. Field cross sections were surveyed on the lower Fox River below the De Pere Dam, but were not used for step-backwater hydraulic analyses because it was determined that lake levels were the controlling factor. Starting water-surface elevations upstream of the De Pere Dam were determined through a hydraulic analysis based on the assumption that eight gates of the dam were open. All Fox River tributary stream water-surface profiles were related to expected coincidental flooding on the Fox River. The Suamico River was related to the elevation-frequency data for Lake Michigan.

Starting water-surface elevations for Baird Creek were taken at its junction with the East River flowlines. For Duck Creek, starting water-surface elevations were based on a parallel linear interpolation between the known 1-percent annual chance stage at the Shawano Highway bridge, determined above, and the Green Bay frequency levels. Starting water-surface elevations for Beaver Dam Creek were taken at its junction with the Duck Creek flowlines.

The starting water-surface elevations for Unnamed Tributary A were determined from the 10-percent annual chance water-surface elevation for the East River. For Unnamed Tributary B the starting water-surface elevations were taken at the junction with the Unnamed Tributary A flowlines.

The starting water-surface elevations for the Middle and South Branches Little Suamico River and Plum Creek were obtained by using the Computer Program Hydraulics of Bridge Waterways (Wisconsin Department of Natural Resources, 1978).

For Willow Creek, the starting water-surface elevation was based on the 10-percent annual chance flood elevation at the confluence with the East River. North Branch Willow Creek and First North Branch Willow Creek both had starting water-surface elevations at the 1-percent annual chance flood elevations at adjacent streams.

The starting water-surface elevations for remaining streams were determined by the slope-area method.

For the flooding sources which are studied approximate analyses and listed in “2.1 Scope of Study”, HEC-GeoRAS was used to convert centerline and cross section data created in ArcGIS (Reference 13) for use in HEC-RAS 3.1.3 (USACE, 2003). HEC-GeoRAS utilized an area Triangulated Irregular Network (TIN) model developed from 10 and 30 meter resolution National Elevation Dataset (NED) Digital Elevation Model (DEM) files to develop the model cross sections. The same TIN which was used for floodplain mapping. Road crossing locations were selected by looking at the aerial photos and modeled as inline structures. Normal depth was used as the downstream boundary condition for reaches in this study. The slope was calculated using the channel invert profile between the five downstream most cross sections (approximately most downstream mile of channel).

Channel roughness factors (Manning's "n") for these computations were assigned on the basis of inspection of floodplain areas and engineering judgment.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2).

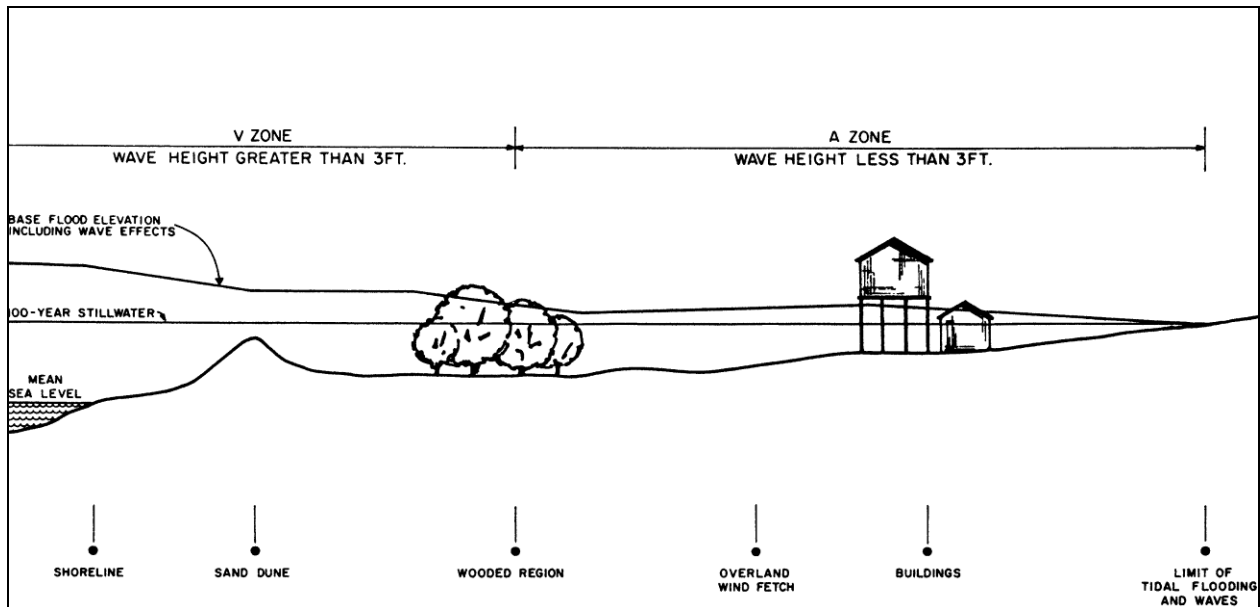
3.3 Coastal Analyses

The methodology for analyzing the effects of wave heights associated with coastal storm surge flooding is described in a report prepared by the National Academy of Sciences (NAS) (National Academy of Sciences, 1977). The NAS wave height methodology is based on three major physical concepts. First, depth-limited waves in shallow water reach a maximum breaking height that is equal to 78 percent of the stillwater depth and the wave crest elevation is equal to 70 percent of the wave height plus the stillwater elevation. Second, the wave height may be diminished by dissipation of energy due to the presence of obstructions such as sand dunes, dikes, seawalls, buildings, and vegetation. The physical characteristics of the obstruction dictate that amount of wave energy dissipation. The third major concept is that the wave height can be regenerated in open fetch areas due to the transfer of wind energy to the water. The resultant wave height is a function of both fetch and stillwater depth.

For the original countywide study, new analyses of wave heights and wave runup were performed using the stillwater elevations discussed in section “3.1 – Hydrologic Analyses” for Green Bay.

Wave heights were added to stillwater storm surge elevations using the methodology recommended by the National Academy of Sciences (FEMA, 1996). This methodology considers maximum conditions associated with the 1-percent annual chance flood and uses transects that were oriented perpendicularly to the shoreline to deduce wave crest elevations from the coast and inland bays to the limits of the 1-percent annual chance floodplain. The transects used in this study are shown on the FIRM and were chosen based on topography, vegetation, and cultural development.

FIGURE 1 – TRANSECT SCHEMATIC



Wave heights were computed along transects (cross-section lines) that were located along the coastal areas in accordance with the Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping – Great Lakes (FEMA, 1996). The transects were located with consideration given to the physical and cultural characteristics of the land so that they would closely represent conditions of their locality. Transects were spaced close together in areas of complex topography and dense development. In areas having more uniform characteristics, they were spaced at larger intervals. It was also necessary to locate transects in areas where unique flooding existed and in areas where computed wave heights varied significantly between adjacent transects. The location of the transects for the county are shown on the FIRMs. The average mean lake level according to USGS quads is 580 ft NAVD. A shoreline at 580 ft NAVD will be used as the starting point for the transects and shown on the FIRMs. Calculations along the transects were continued inland until the waves were substantially dissipated, or until flooding from another source with an equal

water-surface elevation could be reached. Figure 1, “Transect Schematic,” is a profile for a typical transect illustrating the effects of energy dissipation and regeneration of a wave as it moves inland.

Due to the unavailability of wave data within Green Bay the starting wave conditions for each transect was determined using the USACE ACES program (USACE, 1992). Since Green Bay is a mostly enclosed bay the shallow water restricted fetch analysis is used. To determine the fetch lengths for each fetch a consistent shoreline covering the entire shore of Green Bay was obtained from the NOAA Coastal Service Center web site. This shoreline represents the mean low water line. A radical array of fetch lines is drawn at 10 degree increments from 8 different locations. Each fetch array location is representative for a group of transects as shown in Table 4 below. Each radical fetch line is extended until it intersects with the opposite shoreline and the line is measured to obtain the fetch length. It is also realized that the long and narrow shape of Green Bay may prohibit full fetch generation of the wave, but for this simplified analysis it is ignored, hence the results may be somewhat conservative. The average depth of each set of fetch arrays was obtained by overlaying the fetch lines with a NOAA Nautical Chart for Green Bay. The added depth due to the 1-percent annual chance stillwater elevation was also taken into account. The depths were weighted more to the longest fetch line because this would be where the maximum wave height is being generated from.

For the Great Lakes region an equivalent 3-year return period starting wave condition is thought to be representative together with the 1-percent annual chance stillwater level of the 1-percent annual chance event. A 40-mph storm wind speed with 12 hour duration is used to generate the wave conditions. This wind speed is considered to be the maximum sustained wind speed measured on the Great Lakes.

The resulting deepwater significant wave heights and peak spectral periods as well as the calculated controlling wave height ($1.6 \cdot H_{mo}$) can be seen in Table 4 below.

TABLE 4 – STARTING WAVE HEIGHTS

Fetch	Transects	Wave Height H_{mo} (ft)	Controlling Wave Height H_c (ft)	Wave Period T_p (sec)
A	1,2	10.09	16.14	6.48
B	3,4,5,6	6.96	11.14	5.26
C	7,8	9.71	15.54	6.3
D	9,10,11,12	9.61	15.38	6.25
E	13,14,15,16,17	9.96	15.94	6.42
F	18,19,20,21,22	3.33	5.33	3.77
G	23,24,25,26	8.8	14.08	5.89
H	27,28,29,30,31	9.39	15.02	6.15

The waves shown in Table 4 will shoal and start to break before reaching the shoreline and the maximum depth limited wave height at the shoreline will be approximately the water depth at the shoreline, approximately 6 ft, times the breaker index adopted by FEMA, 0.78, which gives an approximate maximum wave height at the shoreline of 4.68 feet.

Each transect was taken perpendicular to the shoreline and extended inland to a point where wave action ceased. Along each transect, wave heights and crest elevations were computed considering the combined effects of changes in ground elevation, vegetation, and physical features. The stillwater elevations for the 1-percent annual chance flood were used as the starting elevations for these computations. Wave heights were calculated to the nearest 0.1 foot, and wave elevations were determined at whole foot increments along the transects. The location of the 3-foot breaking wave, the terminus of the V-Zone (coastal high hazard area), was computed at each transect.

FEMA defines a “coastal high hazard area” as an area of special flood hazards extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action (i.e., wave heights greater than or equal to 3 feet) from storms or seismic sources. The “primary frontal dune” is defined as a continuous mound or ridge of sand with relatively steep seaward and landward slopes immediately landward and adjacent to the beach and subject of erosion and overtopping from high tides and waves during major coastal storms, such as Northeasters. The inland limit of the primary frontal dune occurs at the point which there is a distinct change from a relatively steep slope to a relatively mild slope. In Brown County, no primary frontal dunes were accounted for in determining the flooding hazards.

No VE Zones will be shown on the FIRM for Brown County. All coastal flood zones with wave heights greater than 3 feet, defined as a VE Zone will be designated and shown on the FIRM as AE Zones. In Brown County, the computed VE Zones are very narrow, making their usefulness uncertain on maps at usual scales. Also, relatively small numbers of existing coastal buildings are affected in Brown County by VE Zone designations along Green Bay.

No erosion or removal of any structures was performed for Brown County. The transects will be used unaltered from the original topographic contours. The wave energy and composition of the shoreline in Green Bay are such that erosion by the FEMA standard methodology does not apply. All Structures will be considered adequate to withstand the 1-percent annual chance wave conditions in Green Bay, until such time that a severe flood and wave event damage shore structures. After storm events, any damaged structures not repairable or able to be maintained will be subject to a coastal revision based on existing conditions.

Table 5 “Transect Descriptions,” describes the location of each transect. In addition, Table 5 provides the 1-percent annual chance stillwater and maximum 1-percent annual chance wave crest elevations for each transect.

TABLE 5 – TRANSECT DESCRIPTIONS

<u>TRANSECT</u>	<u>LOCATION</u>	<u>ELEVATION (feet NAVD)</u>	
		<u>1-PERCENT STILLWATER</u>	<u>MAX. 1-PERCENT WAVE CREST¹</u>
1	At the shoreline of Green Bay, in the Town of Suamico, approximately 1,741 feet east of the intersection of Norfield Road and Bayside Road	585.50	588.4
2	At the shoreline of Green Bay, in the Town of Suamico, approximately 8,507 feet southeast of the intersection of Norfield Road and Bayside Road	585.50	588.4
3.	At the shoreline of Green Bay, in the Town of Suamico, approximately 797 feet southeast of the intersection of Resort Road and Cottage Row	585.50	588.3
4	At the shoreline of Green Bay, in the Town of Suamico, approximately 901 feet north of the intersection of Sunset Beach Road and Sunset Beach Lane	585.50	588.3
5	At the shoreline of Green Bay, in the Town of Suamico, approximately 3,224 feet east of the intersection of Riverside Drive and Seafarer Way	585.50	588.3
6	At the shoreline of Green Bay, in the Town of Suamico, approximately 4,008 feet east of the intersection of Harbor Lights Road and Longview Lane	585.50	588.3

TABLE 5 – TRANSECT DESCRIPTIONS – continued

<u>TRANSECT</u>	<u>LOCATION</u>	<u>ELEVATION (feet NAVD)</u>	
		<u>1-PERCENT STILLWATER</u>	<u>MAX. 1-PERCENT WAVE CREST¹</u>
7	At the shoreline of Green Bay, in the Town of Suamico, approximately 4,147 feet east of the intersection of Long Trail Beach Road and Longview Lane	585.50	588.4
8	At the shoreline of Green Bay, in the Town of Suamico, approximately 708 feet north of the intersection of Lineville Road and Bayshore Drive	585.50	588.4
9	At the shoreline of Green Bay, in the Village of Howard, approximately 1,618 feet southeast of the intersection of Lakeview Drive and Cottage Grove Avenue	585.60	588.5
10	At the shoreline of Green Bay, in the Village of Howard, approximately 2,425 feet southeast of the intersection of Lakeview Drive and U.S. Highway 41	585.60	588.5
11	At the shoreline of Green Bay, in the Village of Howard, approximately 1,343 feet east of the intersection of U.S. Highway 41 and Interstate 43	585.60	588.5
12	At the shoreline of Green Bay, in the City of Green Bay, approximately 5,174 feet north of the intersection of Interstate 43 and Atkinson Drive	585.70	593.6 ²

TABLE 5 – TRANSECT DESCRIPTIONS – continued

<u>TRANSECT</u>	<u>LOCATION</u>	<u>ELEVATION (feet NAVD)</u>	
		<u>1-PERCENT STILLWATER</u>	<u>MAX. 1-PERCENT WAVE CREST¹</u>
13	At the shoreline of Green Bay, in the City of Green Bay, approximately 3,370 feet north of the intersection of Interstate 43 and Bylsby Avenue	585.70	588.7
14	At the shoreline of Green Bay, in the City of Green Bay, approximately 3,316 feet north of the intersection of Interstate 43 and Quincy Street	585.70	588.7
15	At the shoreline of Green Bay, in the City of Green Bay, approximately 3,193 feet north of the intersection of Interstate 43 and Webster Avenue	585.70	594.0 ²
16	At the shoreline of Green Bay, in the City of Green Bay, approximately 3,755 feet north of the intersection of Interstate 43 and Danz Avenue	585.70	591.0 ²
17	At the shoreline of Green Bay, in the City of Green Bay, approximately 2,422 feet north of the intersection of Sturgeon Bay and Nicolet Drive	585.70	589.0 ²
18	At the shoreline of Green Bay, in the City of Green Bay, approximately 1,218 feet northeast of the intersection of Nicolet Drive and Circle Drive	585.70	588.4

TABLE 5 – TRANSECT DESCRIPTIONS – continued

<u>TRANSECT</u>	<u>LOCATION</u>	<u>ELEVATION (feet NAVD)</u>	
		<u>1-PERCENT STILLWATER</u>	<u>MAX. 1-PERCENT WAVE CREST¹</u>
19	At the shoreline of Green Bay, in the City of Green Bay, approximately 1,201 feet southwest of the intersection of Nicolet Drive and Scottwood Drive	585.70	588.3 ²
20	At the shoreline of Green Bay, in the City of Green Bay, approximately 821 feet north of the intersection of Nicolet Drive and Scottwood Drive	585.70	588.0 ²
21	At the shoreline of Green Bay, in the City of Green Bay, approximately 1,320 feet southwest of the intersection of Nicolet Drive and Van Laanen Road	585.70	588.0 ²
22	At the shoreline of Green Bay, in the City of Green Bay, approximately 1,219 feet southwest of the intersection of Nicolet Drive and Au Sable Drive	585.70	588.4
23	At the shoreline of Green Bay, in the Town of Scott, approximately 5,359 feet southwest of the intersection of Nicolet Drive and Fisher Road	585.60	588.5
24	At the shoreline of Green Bay, in the Town of Scott, approximately 2,316 feet northwest of the intersection of Nicolet Drive and Fisher Road	585.60	588.5

TABLE 5 – TRANSECT DESCRIPTIONS – continued

<u>TRANSECT</u>	<u>LOCATION</u>	<u>ELEVATION (feet NAVD)</u>	
		<u>1-PERCENT STILLWATER</u>	<u>MAX. 1-PERCENT WAVE CREST¹</u>
25	At the shoreline of Green Bay, in the Town of Scott, approximately 2,255 feet northeast of the intersection of Nicolet Drive and Grove Road	585.60	588.5
26	At the shoreline of Green Bay, in the Town of Scott, approximately 1,400 feet southwest of Nicolet Drive and Beaumier Court	585.60	588.5
27	At the shoreline of Green Bay, in the Town of Scott, approximately 2,574 feet northwest of the intersection of Nicolet Drive and Renier Road	585.60	588.5
28	At the shoreline of Green Bay, in the Town of Scott, approximately 3,186 feet north of the intersection of Nicolet Drive and Point Comfort Road	585.60	588.5
29	At the shoreline of Green Bay, in the Town of Scott, approximately 2,631 feet north of the intersection of Nicolet Drive and Edgewater Beach Road	585.60	589.6 ²
30	At the shoreline of Green Bay, in the Town of Scott, approximately 2,148 feet north of the intersection of Sturgeon Bay Road and Bowers Road	585.60	588.5

TABLE 5 – TRANSECT DESCRIPTIONS – continued

<u>TRANSECT</u>	<u>LOCATION</u>	<u>ELEVATION (feet NAVD)</u>	
		<u>1-PERCENT STILLWATER</u>	<u>MAX. 1-PERCENT WAVE CREST¹</u>
31	At the shoreline of Green Bay, in the Town of Green Bay, approximately 1,645 feet northeast of the intersection of Sturgeon Bay Road and Sugar Bush Road	585.40	591.8 ²
32	At the shoreline of Green Bay, in the Town of Green Bay, approximately 477 feet north of the intersection of Sturgeon Bay Road and Tielens Road	585.40	589.4 ²

¹Because of map scale limitations, the maximum wave elevation may not be shown on the FIRM

²Maximum 1% annual chance runup elevation

For this revision, transects were determined using Brown County contours, photographically compiled from 2000 County Orthophotographs, 2-ft Contours, NAVD 88 and high resolution color aerial imagery for Brown County from 2000 (Brown County Land Information Office, 2000).

Based on the stillwater elevations the wave envelope was computed for each transect. The wave envelope represents the maximum vertical landward limit of wave activity and included the wave crest elevations. The computer program “Great Lakes - Wave Height Analysis for Flood Insurance Studies,” or GL-WHAFIS, (FEMA, 1996) provided the maximum expected wave crest elevation along each transect. This methodology accounted for fetch length, submerged bathymetry, and type and extent of land cover along each transect. Density, type, and physical dimensions of rigid and flexible vegetation, buildings, and other structures were considered based on field inspection.

The USACE ACES program was used to perform the runup analysis. The runup program for the Great Lakes made for FEMA by the USACE, Detroit District is no longer supported. ACES uses a updated methodology for runup on plain slope beaches (MASE, 1989). This is the same method that has been incorporated into the new USACE Coastal Engineering Manual (USACE, 2002).

Table 6, “Transect Data,” includes the flooding source, 10-percent, 2-percent, 1-percent, 0.2-percent annual chance stillwater elevations, flood hazard zone designation, and base flood elevation.

TABLE 6 – TRANSECT DATA

<u>FLOODING SOURCE</u>	<u>STILLWATER ELEVATIONS (feet NAVD)</u>				<u>ZONE</u>	<u>BASE FLOOD ELEVATION (feet NAVD)¹</u>
	<u>10 %</u>	<u>2 %</u>	<u>1 %</u>	<u>0.2%</u>		
GREEN BAY						
Transects 1-8	584.0	586.5	585.5	586.5	AE	586-588
Transects 9-11	584.0	586.5	585.6	586.5	AE	586-589
Transect 12	584.1	586.7	585.7	586.7	AE AE	594 ² 586
Transects 13-14	584.1	586.7	585.7	586.7	AE	586-589
Transect 15	584.1	586.7	585.7	586.7	AE AE	594 ² 586
Transect 16	584.1	586.7	585.7	586.7	AE AO AE	591 ² Depth 2 feet 586
Transect 17	584.1	586.7	585.7	586.7	AE AO AE	589 ² Depth 2 feet 586
Transect 18	584.1	586.7	585.7	586.7	AE	586-588
Transects 19-21	584.1	586.7	585.7	586.7	AE	588 ²
Transect 22	583.9	586.7	585.7	586.7	AE AE	588 587 ²
Transect 23	583.9	586.5	585.6	586.5	AE	586-589
Transect 24	583.9	586.5	585.6	586.5	AE AE	588-589 587 ²
Transect 25	583.9	586.5	585.6	586.5	AE AE AE	589 588 ² 586
Transects 26-28	583.9	586.5	585.6	586.5	AE	586-589
Transect 29	583.9	586.5	585.6	586.5	AE AE	590 ² 586-588

TABLE 6 – TRANSECT DATA - continued

<u>FLOODING SOURCE</u>	<u>STILLWATER ELEVATIONS (feet NAVD)</u>				<u>ZONE</u>	<u>BASE FLOOD ELEVATION (feet NAVD)¹</u>
	<u>10 %</u>	<u>2 %</u>	<u>1 %</u>	<u>0.2%</u>		
Transect 30	583.9	586.5	585.6	586.5	AE AE	589 589 ²
Transect 31	583.7	586.4	585.4	586.4	AE	592 ²
Transect 32	583.7	586.4	585.4	586.4	AE	589 ²

¹Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted

²Maximum 1% annual chance wave runup elevation

3.4 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent communities may be referenced to NGVD 29. This may result in differences in base flood elevations across the corporate limits between communities. Elevation reference marks used in this FIS, and their descriptions, are shown on the maps.

Prior versions of the FIS report and FIRM were referenced to NGVD 29. When a datum conversion is effected for an FIS report and FIRM, the flood profiles, base flood elevations (BFEs), and Elevation Reference Marks reflect the new datum values. To compare structure and ground elevations to 1-percent annual chance (100-year) flood elevations shown in the FIS and on the FIRM, the subject structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in the FIS report and on the FIRM for Brown County are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. To get the conversion from NAVD 88 to NGVD 29, add 0.0349 foot to the NAVD 88 elevation. The 0.0349 foot value is an average for the entire county. Since this conversion value is so small the actual elevations shown on the FIRM and in this FIS report remains unchanged. The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 12.4 will appear as 12 on the FIRM and 12.6 will appear as 13. Therefore, users that wish to convert the elevations in this FIS to NGVD 29 should apply the stated

conversion factor to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address <http://www.ngs.noaa.gov>).

4.0 **FLOODPLAIN MANAGEMENT APPLICATIONS**

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent annual chance floodplain data, which may include a combination of the following: 10-percent, 2-percent, 1-percent, and 0.2-percent annual chance flood elevations; delineations of the 1-percent and 0.2-percent annual chance floodplains; and 1-percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 1-percent and 0.2-percent annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section.

For coastal areas in the original countywide FIS, the boundaries and hazard zones between transects were interpolated using the Brown County contours (Brown County Land Information Office, 2004), at a contour interval of 2 feet.

For Village of Hobart, in the original countywide dated August 18 2009, the 1-percent and 0.2-percent annual change floodplain boundaries were interpolated using the 2 feet contour interval topography received from The Oneida Nation of Wisconsin.

For this countywide revision, areas along the Trout Creek the 1-percent and 0.2-percent annual change floodplain boundaries were interpolated using the 2 feet contour interval topography provided by Brown County. This information was dated 2010.

For streams studied by approximate methods, only the 1-percent annual chance floodplain boundaries are shown on the FIRM. 1-percent annual chance

floodplain boundaries were interpolated using the 2 feet contour interval where available and 10 feet contour interval topographic maps provided by the county.

Floodplain boundaries are indicated on the FIRM. On this map, the 1-percent annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zone A, Zone AE, and Zone AO) and the 0.2-percent floodplain boundary corresponds to the boundary of areas of moderate flood hazards (Zone X). In cases where the 1-percent and 0.2-percent annual chance floodplain boundaries are close together, only the 1-percent annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

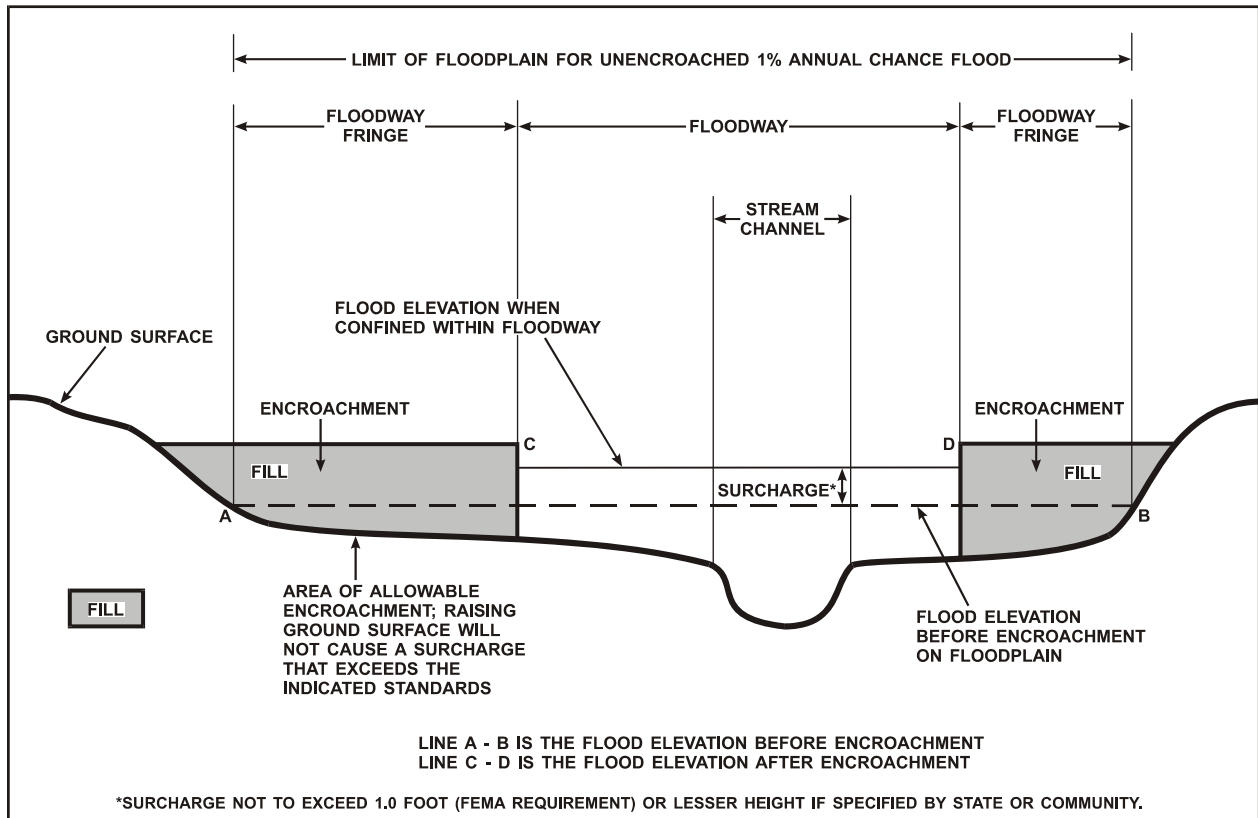
Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced, and is reflected for streams not restudied in this FIS. However, the WDNR has established a policy that limits encroachment in the floodplain to 0.01 foot (WDNR, 1986). The floodways in this FIS are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

Floodway analyses were based on equal conveyance reduction and adjusted as necessary to account for the effects of existing development and to provide functionable and manageable floodways. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 7, "Floodway Data." The computed floodways are shown on the FIRM or on the Flood Boundary and Floodway Map. In cases where the floodway and the 1-percent annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Along streams where floodways have not been computed, the county must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the county. No floodway was computed for Barina Creek.

The area between the floodway and the 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent annual chance flood by more than 1.0-foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown on the Floodway Schematic (Figure 2).

FIGURE 2 – FLOODWAY SCHEMATIC



In the redelineation efforts, the floodway was not recalculated. As a result, there were areas where the previous floodway did not fit within the boundaries of the 1-percent annual chance floodplain. Therefore, in these areas, the floodway was reduced. Table 7, Floodway Data Table lists the water surface elevations, with and without a floodway, the mean velocity in the floodway, and the location and area at each surveyed cross section as determined by hydraulic methods. The width of the floodway depicted by the FIRM panels and the amount of reduction to fit the floodway inside the 1-percent annual chance floodplain, if necessary, is also listed.

Also note the Trout Creek cross-sections A through D were not shown on the FIRM because flooding in that area is influenced by confluence with the Duck Creek.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ash Street Tributary to Lancaster Creek								
A	104	144	121	1.5	602.5	602.5	602.5	0.0
B	466	39	70	2.7	605.8	605.8	605.8	0.0
C	686	29	36	5.1	608.3	608.3	608.3	0.0

¹ Feet above Limit of Detailed Study

* Limit of Detailed Study is approximately 500 feet downstream of Ash Street

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

ASH STREET TRIBUTARY TO LANCASTER CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ashwaubenon Creek (Middle)									
A	46,727	595	1,760	1.4	25	617.5	617.5	617.5	0.0
B	47,977	515	1,510	1.7	-7	618.7	618.7	618.7	0.0
C	49,217	466	1,226	2.0	41	620.7	620.7	620.7	0.0
D	50,177	636	2,725	0.9	-12	621.4	621.4	621.4	0.0
E	51,157	437	2,429	1.0	14	623.3	623.3	623.3	0.0
F	51,967	670	3,700	0.7	28	623.6	623.6	623.6	0.0
G	52,557	436	2,141	1.2	29	623.7	623.7	623.7	0.0
H	52,907	468	2,221	1.1	-11	623.8	623.8	623.8	0.0
I	54,907	573	2,510	1.0	0	625.5	625.5	625.5	0.0
J	55,087	474	1,926	1.3	60	625.6	625.6	625.6	0.0
K	56,546	398	1,635	1.5	5	626.6	626.6	626.6	0.0
L	57,687	380	1,704	1.5	-3	627.9	627.9	627.9	0.0
M	58,387	396	1,827	1.4	23	628.4	628.4	628.4	0.0

¹ Feet above mouth of Ashwaubenon Creek at the Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

ASHWAUBENON CREEK (MIDDLE)

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ashwaubenon Creek (Upper)								
A	81,950	172	1,520	2.5	651.7	651.7	651.7	0.0
B	82,355	276	3,626	0.8	661.0	661.0	661.0	0.0

¹ Feet above mouth of Ashwaubenon Creek at Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY
**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

ASHWAUBENON CREEK (UPPER)

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ashwaubenon Creek									
A	1,464	322	1,792	1.6	10	585.7	584.7 ²	584.7 ²	0.0
B	2,999	75	718	4.0	-73	585.7	584.8 ²	584.8 ²	0.0
C	4,069	76	557	5.2	-33	585.7	585.3 ²	585.3 ²	0.0
D	4,902	82	835	3.5	-48	586.0	586.0	586.0	0.0
E	5,299	134	1,372	2.1	0	589.7	589.7	589.7	0.0
F	6,557	117	1,363	2.1	-23	589.8	589.8	589.8	0.0
G	7,263	130	1,158	2.5	26	590.1	590.1	590.1	0.0
H	8,540	513	3,758	0.9	243	590.4	590.4	590.4	0.0
I	9,575	62	663	4.4	-30	590.4	590.4	590.4	0.0
J	11,483	140	2,223	2.3	-62	591.4	591.4	591.5	0.1
K	12,304	101	887	3.3	-71	592.1	592.1	592.2	0.1
L	13,974	498	2,033	1.4	231	593.0	593.0	593.1	0.1
M	15,529	317	689	4.2	84	593.9	594.0	594.0	0.1
N	20,739	449	1,471	1.8	75	598.2	598.2	598.2	0.0
O	24,307	62	603	4.4	-48	601.2	601.2	601.2	0.0
P	25,324	529	3,139	0.8	143	602.2	602.2	602.2	0.0
Q	28,684	389	1,959	1.4	-92	602.7	602.7	602.7	0.0
R	34,560	481	2,446	1.1	104	604.7	604.7	604.7	0.0
S	35,964	93	445	6.0	-136	605.2	605.2	605.2	0.0
T	36,666	50	470	5.6	-165	607.8	607.8	607.8	0.0
U	38,255	362	1,549	1.7	30	610.0	610.0	610.0	0.0
V	39,222	300	1,032	2.6	11	610.6	610.6	610.6	0.0
W	39,987	549	1,815	1.5	68	611.8	611.8	611.8	0.0
X	40,747	608	2,177	1.2	-240	612.5	612.5	612.5	0.0

¹Feet above mouth

²Elevations computed without consideration of backwater effects from the Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

ASHWAUBENON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Baird Creek Tributary 6								
A	197	109	68	2.4	620.8	620.8	620.8	0.0
B	766	12	19	7.3	647.2	647.2	647.2	0.0
C	1,358	9	18	8.0	672.9	672.9	672.9	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BAIRD CREEK TRIBUTARY 6

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Baird Creek Tributary								
A	1,272	32	133	6.0	720.6	720.6	720.6	0.0
B	2,112	167	455	1.7	729.7	729.7	729.7	0.0
C	3,064	190	225	3.5	734.7	734.7	734.7	0.0
D	4,096	102	173	4.6	741.9	741.9	741.9	0.0
E	5,281	121	196	4.1	750.9	750.9	750.9	0.0
F	7,136	172	343	1.7	766.3	766.3	766.3	0.0
G	8,159	92	201	2.8	770.4	770.4	770.4	0.0
H	8,991	287	526	1.1	772.8	772.8	772.8	0.0
I	9,656	170	703	1.2	774.6	774.6	774.6	0.0
J	10,497	124	358	2.5	777.6	777.6	777.6	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BAIRD CREEK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Baird Creek								
A	1,463	69	487	4.8	588.6	586.9 ²	586.9 ²	0.0
B	2,271	151	800	2.9	588.6	588.2 ²	588.2 ²	0.0
C	3,108	65	407	5.7	588.8	588.8	588.8	0.0
D	4,254	98	926	2.5	593.3	593.3	593.3	0.0
E	4,863	125	1,063	2.1	593.6	593.6	593.6	0.0
F	6,207	320	2,736	0.8	596.1	596.1	596.1	0.0
G	7,329	311	2,128	1.0	596.2	596.2	596.2	0.0
H	8,062	531	4,066	0.5	597.0	597.0	597.0	0.0
I	9,557	385	1,383	1.4	597.1	597.1	597.1	0.0
J	10,706	335	752	2.6	598.1	598.1	598.1	0.0
K	11,436	199	288	6.6	599.9	599.9	599.9	0.0
L	12,521	152	512	3.7	604.2	604.2	604.2	0.0
M	13,812	85	291	6.5	608.3	608.3	608.3	0.0
N	15,414	181	337	5.5	615.9	615.9	615.9	0.0
O	16,314	142	390	4.7	623.0	623.0	623.0	0.0
P	17,424	51	174	10.4	640.0	640.0	640.0	0.0
Q	18,924	62	274	6.5	667.2	667.2	667.2	0.0
R	19,140	88	349	5.4	669.5	669.5	669.5	0.0
S	19,868	128	578	3.3	674.2	674.2	674.2	0.0
T	20,870	141	710	3.5	678.4	678.4	678.4	0.0
U	21,762	147	370	5.1	681.8	681.8	681.8	0.0
V	22,651	207	483	3.7	687.2	687.2	687.2	0.0
W	23,768	105	430	4.1	691.9	691.9	691.9	0.0
X	24,670	98	295	5.9	694.2	694.2	694.2	0.0
Y	25,641	92	264	5.8	701.0	701.0	701.0	0.0
Z	26,749	284	553	2.7	707.1	707.1	707.1	0.0

¹Feet above mouth

²Elevations computed without consideration of backwater effects from the East River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BAIRD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Baird Creek (continued)								
AA	27,818	334	696	2.2	713.2	713.2	713.2	0.0
AB	28,776	186	354	4.2	719.4	719.4	719.4	0.0
AC	29,459	100	342	4.4	723.8	723.8	723.8	0.0
AD	30,548	67	224	6.7	734.0	734.0	734.0	0.0
AE	31,504	44	348	6.8	741.9	741.9	741.9	0.0
AF	32,786	36	197	7.6	750.1	750.1	750.1	0.0
AG	33,802	42	210	7.0	756.5	756.5	756.5	0.0
AH	34,657	108	1,282	2.6	766.8	766.8	766.8	0.0
AI	35,621	92	571	2.6	767.7	767.7	767.7	0.0
AJ	36,589	242	765	1.9	769.8	769.8	769.8	0.0
AK	37,315	332	657	2.2	770.5	770.5	770.5	0.0
AL	38,070	417	773	1.9	771.3	771.3	771.3	0.0
AM	39,088	365	821	1.8	772.2	772.2	772.2	0.0
AN	39,896	556	1,476	1.0	772.7	772.7	772.7	0.0
AO	40,660	217	780	2.0	773.8	773.8	773.8	0.0
AP	41,748	236	886	1.7	775.3	775.3	775.3	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BAIRD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bakers Creek Tributary								
A	76	27	64	4.5	602.8	602.8	602.8	0.0
B	698	147	176	1.5	604.9	604.9	604.9	0.0
C	1,396	131	147	1.7	607.8	607.8	607.8	0.0
D	1,939	158	163	1.6	610.9	610.9	610.9	0.0
E	2,399	128	117	2.1	616.7	616.7	616.7	0.0

¹ Feet above Velp Avenue

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BAKERS CREEK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bakers Creek								
A	176	67	120	3.2	649.6	649.6	649.6	0.0
B	1,282	165	184	2.1	653.9	653.9	653.9	0.0
C	2,275	29	42	6.4	656.6	656.6	656.6	0.0

¹ Feet above Limit of Detailed Study

* Limit of Detailed Study is located approximately 250 feet downstream of Belmont Road

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BAKERS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Barina Creek								
A	0	41	74	4.0	612.6	612.6	612.6	0.0
B	175	28	37	8.1	613.6	613.6	613.6	0.0
C	276	74	72	4.1	615.5	615.5	615.5	0.0
D	381	223	325	0.9	617.7	617.7	617.7	0.0
E	681	169	1,165	0.5	621.2	621.2	621.2	0.0
F	1,431	162	710	0.5	621.2	621.2	621.2	0.0
G	1,991	159	572	0.4	621.3	621.3	621.3	0.0
H	2,311	38	73	3.2	621.2	621.2	621.2	0.0

¹ Feet above limit of detailed study

*Limit of detailed study is approximately 375 feet downstream of Church Road.

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BARINA CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Beaver Dam Creek									
A	1.089	120	889	1.1	-80	588.1	588.1	588.1	0.0
B	1.717	75	671	1.4	-1	588.3	588.3	588.3	0.0
C	2.567	82	541	1.7	12	588.4	588.4	588.4	0.0
D	4.515	495	1.381	0.7	175	588.8	588.8	588.8	0.0
E	5.265	281	827	1.0	-33	588.9	588.9	588.9	0.0
F	7.518	443	720	1.2	64	592.1	592.1	592.1	0.0
G	10.109	121	382	2.2	-30	597.8	597.8	597.8	0.0
H	11.199	39	112	7.5	-5	599.8	599.8	599.8	0.0
I	15.177	253	872	1.0	178	616.1	616.1	616.1	0.0
J	15.830	200	778	1.1	50	616.5	616.5	616.5	0.0
K	16.961	243	671	1.3	79	617.9	617.9	617.9	0.0
L	17.958	248	688	1.2	63	620.8	620.8	620.8	0.0
M	19.058	174	526	1.6	2	622.8	622.8	622.8	0.0
N	20.158	410	1.106	0.8	93	624.8	624.8	624.8	0.0
O	21.653	260	825	1.0	122	626.7	626.7	626.7	0.0
P	22.487	316	705	1.2	144	628.5	628.5	628.5	0.0
Q	23.762	318	801	1.1	16	631.8	631.8	631.8	0.0
R	24.823	79	222	3.8	-12	633.9	633.9	633.9	0.0
S	26.247	195	735	1.1	9	638.9	638.9	638.9	0.0
T	26.989	175	681	1.2	-5	641.3	641.3	641.3	0.0
U	28.314	252	685	1.2	134	646.2	646.2	646.2	0.0
V	29.304	170	580	1.5	11	650.3	650.3	650.3	0.0
W	30.164	211	495	1.7	33	652.6	652.6	652.6	0.0
X	31.205	110	747	1.1	-23	660.5	660.5	660.5	0.0
Y	32.493	165	479	1.8	3	661.7	661.7	661.7	0.0
Z	33.396	198	404	2.1	82	666.1	666.1	666.1	0.0
AA	35.039	247	926	0.9	35	676.7	676.7	676.7	0.0

¹Feet above confluence with Duck Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BEAVER DAM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bower Creek Tributary 1								
A	1,953	684	3,000	1.7	590.9	589.4 ²	589.4 ²	0.0
B	3,067	1,359	2,684	1.4	590.9	590.0 ²	590.0 ²	0.0
C	4,654	1,198	1,706	1.6	591.1	591.1	591.1	0.0
D	5,934	461	5,953	2.4	593.9	593.9	593.9	0.0
E	6,630	115	1,575	3.7	597.0	597.0	597.0	0.0
F	7,888	285	379	2.7	600.0	600.0	600.0	0.0
G	9,109	268	338	3.0	604.4	604.4	604.4	0.0
H	10,802	327	526	2.0	618.3	618.3	618.3	0.0

¹ Feet above mouth

² Elevation computed without consideration of backwater effects from the East River

TABLE 7

**FEDERAL EMERGENCY MANAGEMENT AGENCY
BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BOWER CREEK TRIBUTARY 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bower Creek Tributary 2								
A	296	228	2,238	0.6	594.7	594.7	594.7	0.0
B	885	140	633	1.8	594.8	594.8	594.8	0.0
C	1,599	35	253	5.6	600.1	600.1	600.1	0.0
D	1,910	124	412	1.8	604.8	604.8	604.8	0.0
E	3,136	71	200	4.1	612.3	612.3	612.3	0.0
F	4,298	204	651	0.3	624.0	624.0	624.0	0.0
G	5,169	41	131	5.3	632.3	632.3	632.3	0.0
H	6,040	17	14	16.4	674.5	674.5	674.5	0.0
I	6,295	117	183	1.6	698.6	698.6	698.6	0.0
J	7,193	20	97	4.7	701.7	701.7	701.7	0.0
K	8,122	14	20	3.0	707.1	707.1	707.1	0.0
L	8,816	32	22	2.8	716.8	716.8	716.8	0.0
M	9,583	42	28	2.7	729.7	729.7	729.7	0.0

¹ Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BOWER CREEK TRIBUTARY 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bower Creek Tributary A								
A	256	222	2015	0.8	606.3	606.3	606.3	0.0
B	1,183	47	111	3.6	607.6	607.6	607.6	0.0
C	3,005	51	74	4.7	622.3	622.3	622.3	0.0
D	5,328	131	131	2.6	639.3	639.3	639.3	0.0

¹ Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BOWER CREEK TRIBUTARY A

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bower Creek Tributary B								
A	289	148	380	1.8	606.7	606.7	606.7	0.0
B	844	135	190	3.6	611.7	611.7	611.7	0.0
C	1,594	117	175	4.8	619.6	619.6	619.6	0.0
D	2,266	143	202	3.4	628.5	628.5	628.5	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BOWER CREEK TRIBUTARY B

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bower Creek Tributary								
A	267	153	750	2.3	827.4	827.4	827.4	0.0
B	815	59	780	3.3	831.3	831.3	831.3	0.0

¹Feet above Limit of Detailed Study

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BOWER CREEK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Bower Creek								
A	1.834	1.340	6.845	1.3	590.9	588.3 ²	588.3 ²	0.0
B	3.092	1.055	5.143	1.9	590.9	588.5 ²	588.5 ²	0.0
C	4.526	1.570	7.882	1.4	590.9	588.9 ²	588.9 ²	0.0
D	6.040	1.430	4.912	1.3	590.9	589.1 ²	589.1 ²	0.0
E	7.244	1.545	4.177	1.3	590.9	589.3 ²	589.3 ²	0.0
F	8.038	1.306	3.774	1.5	590.9	589.5 ²	589.5 ²	0.0
G	9.406	270	1.410	5.7	590.9	589.5 ²	589.5 ²	0.0
H	10.790	665	4.765	1.8	592.4	592.4	592.4	0.0
I	12.083	650	3.822	1.9	592.9	592.9	592.9	0.0
J	13.615	520	3.514	2.5	593.7	593.7	593.7	0.0
K	15.451	640	2.722	2.4	595.0	595.0	595.0	0.0
L	17.386	1.385	6.285	1.3	597.5	597.5	597.5	0.0
M	18.468	771	2.440	2.2	597.7	597.7	597.7	0.0
N	19.299	630	1.359	3.5	598.0	598.0	598.0	0.0
O	20.297	129	1.259	8.9	600.8	600.8	600.8	0.0
P	21.297	345	1.150	3.4	606.2	606.2	606.2	0.0
Q	22.235	184	2.247	3.2	606.9	606.9	606.9	0.0
R	23.246	143	8.28	5.3	609.6	609.6	609.6	0.0
S	24.106	326	1.564	2.5	612.0	612.0	612.0	0.0
T	24.955	257	693	5.6	612.9	612.9	612.9	0.0
U	26.048	92	525	7.4	617.4	617.4	617.4	0.0
V	27.000	339	2.057	1.9	620.8	620.8	620.8	0.0
W	27.799	265	1.175	3.3	621.1	621.1	621.1	0.0
X	28.787	316	1.279	3.7	622.7	622.7	622.7	0.0
Y	29.695	316	1.283	3.8	626.2	626.2	626.2	0.0
Z	30.669	775	1.576	2.7	632.2	632.2	632.2	0.0

¹ Feet Above Mouth

² Elevations computed without consideration of backwater effects from East River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BOWER CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Branch Plum Creek Lower Tributary									
A	270	119	116	1.2	-105	766.1	766.1	766.1	0.0
B	540	64	44	3.1	-7	766.7	766.7	766.7	0.0
C	730	82	66	2.1	-32	768.1	768.1	768.1	0.0
D	910	70	56	2.5	-24	768.9	768.9	768.9	0.0
E	1,180	78	61	3.4	-8	770.4	770.4	770.4	0.0
F	1,391	84	59	3.4	4	771.4	771.4	771.4	0.0
G	1,591	22	33	4.2	-2	772.6	772.6	772.6	0.0

¹Feet above confluence with Branch of Plum Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BRANCH OF PLUM CREEK LOWER TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Branch Plum Creek Upper Tributary									
A	300	112	161	2.5	-13	765.7	765.7	765.7	0.0
B	458	98	125	2.8	-24	765.9	765.9	765.9	0.0
C	648	63	90	4.1	-11	766.3	766.3	766.3	0.0
D	848	102	110	3.8	-6	767.0	767.0	767.0	0.0
E	978	94	90	4.1	-13	767.5	767.5	767.5	0.0
F	1,189	20	48	5.9	3	768.7	768.7	768.7	0.0

¹Feet above confluence with Branch of Plum Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BRANCH OF PLUM CREEK UPPER TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Branch of Plum Creek									
A	612	186	352	4.2	-4	765.3	765.3	765.3	0.0
B	823	184	323	2.9	0	765.7	765.7	765.7	0.0
C	1,034	262	394	2.8	-8	766.1	766.1	766.1	0.0
D	1,245	281	387	2.9	16	766.4	766.4	766.4	0.0

¹Feet above Holland Court

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BRANCH OF PLUM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Branch River								
A	1,216	920	4,910	0.7	839.4	839.4	839.4	0.0
B	6,876	720	3,040	1.2	839.6	839.6	839.6	0.0
C	8,559	440	2,140	1.3	840.0	840.0	840.0	0.0
D	10,775	510	1,845	1.5	843.6	843.6	843.6	0.0
E	12,445	50	460	6.2	845.5	845.5	845.5	0.0
F	14,066	280	565	5.1	847.6	847.6	847.6	0.0
G	16,069	720	1,685	1.7	851.1	851.1	851.1	0.0

¹ Feet above limit of detailed study

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

BRANCH RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Duck Creek Tributary - Stream 11								
A	283	434	1,477	0.4	605.7	604.2 ²	604.2 ²	0.0
B	983	27	62	5.5	611.4	611.4	611.4	0.0
C	1,707	73	129	2.6	624.2	624.2	624.2	0.0
D	2,406	65	103	3.3	637.0	637.0	637.0	0.0
E	3,092	26	80	4.2	647.1	647.1	647.1	0.0
F	3,917	89	458	0.7	665.8	665.8	665.8	0.0
G	4,501	53	140	2.4	668.4	668.4	668.4	0.0

¹Feet above mouth

²Elevation computed without consideration of backwater effects from Duck Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUCK CREEK TRIBUTARY – STREAM 11

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Duck Creek Tributary 12								
A	745	105	132	1.9	644.4	644.4	644.4	0.0
B	1,489	52	99	1.6	656.9	656.9	656.9	0.0
C	2,149	28	15	3.9	665.4	665.4	665.4	0.0
D	2,724	26	15	4.1	674.0	674.0	674.0	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUCK CREEK TRIBUTARY – STREAM 12

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Duck Creek									
A	510	323	1.556	4.2	1	585.7	584.0 ²	584.0	0.0
B	1.182	305	1.758	3.7	-1	585.7	584.7 ²	584.7	0.0
C	2.352	560	3.834	1.7	-5	585.7	585.3 ²	585.3	0.0
D	3.252	173	1.459	4.5	-12	585.7	585.5 ²	585.5	0.0
E	4.748	625	3.943	1.7	-7	587.2	587.2 ²	587.2	0.0
F	5.938	594	2.196	3.0	469	587.4	587.4	587.4	0.0
G	6.830	225	2.244	2.9	-12	588.0	588.0	588.0	0.0
H	7.750	717	4.288	1.5	596	588.4	588.4	588.4	0.0
I	8.940	634	4.906	1.3	141	588.6	588.6	588.6	0.0
J	10.290	230	2.284	2.7	-3	588.9	588.9	588.9	0.0
K	10.731	1,438	7.174	0.9	1,299	590.5	590.5	590.5	0.0
L	12.466	576	4.716	1.3	-3	590.7	590.7	590.7	0.0
M	13.774	350	2.913	2.0	6	590.8	590.8	590.8	0.0
N	14.789	637	4.361	1.4	-1	591.0	591.0	591.0	0.0
O	15.553	346	3.070	1.9	4	591.1	591.1	591.1	0.0
P	16.167	375	4.215	1.4	2	591.3	591.3	591.3	0.0
Q	16.907	279	2.962	2.0	0	591.3	591.3	591.3	0.0
R	18.145	244	2.624	2.1	0	591.9	591.9	591.9	0.0
S	18.890	419	6.716	1.3	-1	592.2	592.2	592.2	0.0
T	20.168	780	5.241	1.1	2	592.3	592.3	592.3	0.0
U	20.921	681	3.230	1.7	0	592.4	592.4	592.4	0.0
V	21.978	217	1.315	4.2	-3	593.4	593.4	593.4	0.0
W	23.324	617	2.410	2.3	180	595.6	595.6	595.6	0.0
X	26.444	552	1.536	3.6	372	596.6	596.6	596.6	0.0
Y	27.994	317	1.260	4.4	-5	598.3	598.3	598.3	0.0
Z	29.544	345	1.226	4.5	-90	599.8	599.8	599.8	0.0

¹Feet above mouth

²Elevation computed without considering backwater from Green Bay

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUCK CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Duck Creek (continued)									
AA	30.824	625	2.005	2.8	151	601.8	601.8	601.8	0.0
AB	31.974	399	1.690	3.3	4	602.7	602.7	602.7	0.0
AC	32.604	123	877	6.3	-230	603.4	603.4	603.4	0.0
AD	33.984	990	4.097	1.4	-53	605.4	605.4	605.4	0.0
AE	35.464	835	2.975	1.9	96	605.9	605.9	605.9	0.0
AF	37.624	1,063	4.731	1.2	706	608.2	608.2	608.2	0.0
AG	38.504	956	3.732	1.5	460	613.6	613.6	613.6	0.0
AH	39.334	412	1.663	3.3		614.2	614.2	614.2	0.0
AI	41.094	560	1.824	3.0		618.5	618.5	618.5	0.0
AJ	46.244	629	2.500	2.2		626.4	626.4	626.4	0.0
AK	49.394	729	2.894	1.9		629.4	629.4	629.4	0.0
AL	51.944	758	3.489	1.6		632.1	632.1	632.1	0.0
AM	54.269	643	1.484	3.7		639.6	639.6	639.6	0.0
AN	56.594	562	1.779	3.1		648.6	648.6	648.6	0.0
AO	61.094	619	1.461	3.8		662.7	662.7	662.7	0.0
AP	62.674	174	1.090	5.1		668.4	668.4	668.4	0.0
AQ	65.964	279	1.557	3.6		672.3	672.3	672.3	0.0
AR	68.704	1,027	4.167	1.3		673.8	673.8	673.8	0.0
AS	74.014	400	3.093	1.8		675.3	675.3	675.3	0.0

¹ Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUCK CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dutchman Creek North Tributary									
A	12,148	94	1.088	1.1	1	609.1	609.1	609.1	0.0
B	12,666	332	2.984	0.4	8	611.1	611.1	611.1	0.0
C	13,325	315	1.638	0.7	5	611.1	611.1	611.1	0.0
D	14,418	283	3.633	0.2	1	623.1	623.1	623.1	0.0
E	16,337	92	352	2.2	11	623.3	623.3	623.3	0.0
F	17,325	68	278	2.5	2	624.0	624.0	624.0	0.0
G	18,791	36	64	5.6	0	632.0	632.0	632.0	0.0
H	19,089	132	322	1.1	1	637.5	637.5	637.5	0.0
I	20,544	88	133	2.7	0	646.8	646.8	646.8	0.0
J	21,225	274	943	0.4	0	657.0	657.0	657.0	0.0
K	21,953	201	465	0.5	1	657.0	657.0	657.0	0.0
L	23,429	105	348	0.5	0	671.8	671.8	671.8	0.0
M	23,830	107	382	0.4	0	677.3	677.3	677.3	0.0

¹Above confluence of Dutchman Creek with Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUTCHMAN CREEK NORTH TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dutchman Creek South Tributary									
A	20,085	110	661	2.0	0	613.5	613.5	613.5	0.0
B	20,550	40	331	3.9	1	613.6	613.6	613.6	0.0
C	20,955	115	584	2.2	-3	615.5	615.5	615.5	0.0
D	21,764	39	280	4.6	0	616.2	616.2	616.2	0.0
E	22,306	96	474	2.7	-5	618.3	618.3	618.3	0.0
F	23,207	109	455	2.8	-3	620.6	620.6	620.6	0.0
G	24,164	115	388	3.3	-20	623.2	623.2	623.2	0.0
H	24,713	369	940	1.4	-92	623.9	623.9	623.9	0.0

¹Above confluence of Dutchman Creek with Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUTCHMAN CREEK SOUTH TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dutchman Creek Southeast Tributary									
A	25.072	146	286	1.7	24	625.7	625.7	625.7	0.0
B	25.977	110	133	3.6	-13	629.5	629.5	629.5	0.0
C	26.604	247	982	0.5	23	634.1	634.1	634.1	0.0
D	28.024	378	438	1.1	93	634.5	634.5	634.5	0.0
E	28.844	656	269	1.8	-2	635.9	635.9	635.9	0.0
F	29.519	646	1.071	0.5	-17	636.9	636.9	636.9	0.0
G	31.864	1.013	1.109	0.4	8	637.1	637.1	637.1	0.0

¹Feet above mouth of Dutchman Creek at the Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUTCHMAN CREEK SOUTHEAST TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dutchman Creek Southwest Tributary									
A	25.137	302	617	1.3	-42	624.0	624.0	624.0	0.0
B	26.287	47	171	4.7	-9	628.1	628.1	628.2	0.0
C	26.649	240	1,114	0.7	-3	633.0	633.0	633.0	0.0
D	27.759	160	340	2.4	-61	633.3	633.3	633.3	0.0
E	28.149	120	199	4.0	3	635.2	635.2	635.2	0.0
F	28.559	297	2,445	0.4	5	642.1	642.1	642.1	0.0
G	31.724	190	240	1.6	2	643.0	643.0	643.0	0.0
H	32.959	245	141	2.5	5	644.5	644.5	644.5	0.0
I	33.649	176	107	3.3	8	646.2	646.2	646.2	0.0

¹Feet above mouth of Dutchman Creek at Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUTCHMAN CREEK SOUTHWEST TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Dutchman Creek									
A	483	256	1,816	1.9	1	585.9	585.9	585.9	0.0
B	1,622	142	1,571	2.2	-4	592.9	592.9	592.9	0.0
C	2,633	44	591	5.8	-6	593.2	593.2	593.2	0.0
D	3,124	372	3,956	0.9	0	595.8	595.8	595.8	0.0
E	4,470	709	4,702	0.7	149	595.9	595.9	595.9	0.0
F	5,226	301	1,593	2.2	162	596.1	596.1	596.1	0.0
G	6,158	165	2,229	1.5	-1	596.6	596.6	596.6	0.0
H	7,421	168	1,005	3.3	0	596.8	596.8	596.8	0.0
I	8,534	169	1,136	2.9	0	598.6	598.6	598.6	0.0
J	9,414	165	914	3.6	-1	598.9	598.9	598.9	0.0
K	10,622	95	678	4.9	-1	602.1	602.1	602.1	0.0
L	11,653	447	4,179	0.8	2	605.4	605.4	605.4	0.0
M	12,805	244	1,767	1.8	2	605.5	605.5	605.5	0.0
N	13,612	228	1,947	1.6	-7	607.5	607.5	607.5	0.0
O	17,460	118	676	3.6	1	608.4	608.4	608.4	0.0
P	17,829	107	679	3.6	3	610.2	610.2	610.2	0.0
Q	19,673	291	1,224	1.6	-140	610.8	610.8	610.8	0.0
R	21,711	300	799	2.5	-7	615.3	615.3	615.3	0.0
S	22,214	171	460	4.4	0	619.4	619.4	619.4	0.0
T	24,277	182	504	4.0	0	633.5	633.5	633.5	0.0
U	25,185	83	471	4.2	1	639.5	639.5	639.5	0.0
V	25,770	162	649	3.1	0	646.1	646.1	646.1	0.0
W	26,833	440	1,180	1.7	-5	650.7	650.7	650.7	0.0

¹ Feet above confluence with Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

DUTCHMAN CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East River Tributary A									
A	401	208	891	0.9	0	591.5	588.9 ²	588.9 ²	0.00
B	840	25	141	5.9	-12	591.5	588.9 ²	588.9 ²	0.00
C	1,243	344	1,444	0.6	28	592.4	592.4	592.4	0.00
D	1,914	454	1,766	0.3	5	592.4	592.4	592.4	0.00
E	2,441	446	1,701	0.3	0	592.4	592.4	592.4	0.00
F	2,881	310	827	0.6	0	592.5	592.5	592.5	0.00
G	3,562	186	342	1.4	-36	592.6	592.6	592.6	0.00
H	3,973	116	117	4.0	-8	593.4	593.4	593.4	0.00
I	4,423	164	289	1.8	-5	595.8	595.8	595.8	0.00
J	4,948	26	472	5.5	-14	600.0	600.0	600.0	0.00
K	5,280	189	350	1.2	-22	600.8	600.8	600.8	0.00
L	5,599	80	204	1.3	0	601.0	601.0	601.0	0.00
M	5,902	60	152	1.7	7	602.2	602.2	602.2	0.00
N	6,209	62	73	3.6	-17	602.7	602.7	602.7	0.00
O	6,512	120	788	0.3	-8	605.3	605.3	605.3	0.00
P	7,169	130	586	0.4	-1	605.3	605.3	605.3	0.00
Q	7,572	227	435	0.6	0	611.2	611.2	611.2	0.00
R	8,471	330	454	0.6	-1	612.5	612.5	612.5	0.00
S	8,863	70	127	2.9	-4	612.7	612.7	612.7	0.00

¹Feet above confluence with the East River

²Elevation computed without consideration of backwater effects from the East River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST RIVER TRIBUTARY A

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY (FEET)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East River Tributary B									
A	362	142	283	0.5	7	592.4	589.1 ²	589.1 ²	0.0
B	547	203	410	0.4	5	592.4	589.1 ²	589.1 ²	0.0
C	839	102	67	2.3	-14	592.4	589.9 ²	589.9 ²	0.0
D	1,152	142	128	0.5	-7	592.4	590.5 ²	590.5 ²	0.0
E	1,357	136	80	0.8	6	592.4	590.6 ²	590.6 ²	0.0
F	1,566	32	21	3.0	3	593.4	593.4	593.4	0.0
G	1,793	33	33	1.9	6	595.2	595.2	595.2	0.0

¹Feet above confluence with East River Tributary A

²Elevations computed without consideration of backwater effects from East River Tributary A

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST RIVER TRIBUTARY B

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East River Tributary									
A	4,514	630	1,422	0.5	249	591.5	591.5	591.5	0.0
B	4,904	150	315	2.0	-104	591.6	591.6	591.6	0.0
C	5,519	150	260	2.7	-25	592.0	592.0	592.0	0.0
D	6,309	150	345	1.9	-32	592.5	592.5	592.5	0.0
E	6,559	100	250	2.6		594.7	594.7	594.7	0.0

¹ Feet above confluence with Bower Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST RIVER TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East River								
A	1,492	182	2,183	3.6	585.7	584.4 ²	584.4 ²	0.0
B	2,680	140	1,766	4.4	585.7	585.1 ²	585.1 ²	0.0
C	3,410	146	1,856	4.2	585.7	585.4 ²	585.4 ²	0.0
D	5,962	122	1,245	6.3	586.6	586.6	586.9	0.3
E	7,533	163	1,982	4.0	588.1	588.1	588.3	0.2
F	9,343	500	3,716	2.1	588.5	588.5	588.7	0.2
G	10,512	488	3,601	1.6	588.6	588.6	588.8	0.2
H	11,880	229	2,902	2.0	588.7	588.7	588.9	0.2
I	12,637	948	6,781	0.9	589.0	589.0	589.2	0.2
J	14,620	777	4,808	1.2	589.1	589.1	589.3	0.2
K	16,562	747	3,534	1.6	589.2	589.2	589.4	0.2
L	18,156	175	2,546	2.2	589.3	589.3	589.5	0.2
M	20,186	1,020	8,408	0.7	589.5	589.5	589.8	0.2
N	22,340	600	5,329	1.1	589.6	589.6	589.8	0.2
O	24,473	380	3,963	1.4	589.7	589.7	589.9	0.2
P	26,702	913	5,809	1.0	589.9	589.9	590.1	0.3
Q	30,063	900	6,728	0.8	589.9	589.9	590.3	0.4
R	31,495	420	3,472	1.6	590.0	590.0	590.4	0.4
S	32,883	1,450	11,614	0.5	590.1	590.1	590.5	0.4
T	35,504	265	2,471	2.3	590.2	590.2	590.5	0.4
U	38,584	695	5,117	1.1	590.4	590.4	590.9	0.4
V	41,963	505	3,477	0.8	590.6	590.6	591.1	0.5
W	45,845	1,481	7,165	0.4	590.6	590.6	591.2	0.6
X	49,260	1,086	4,483	0.6	590.7	590.7	591.3	0.6
Y	52,498	173	1,225	2.2	591.2	591.2	591.7	0.5
Z	52,930	202	922	2.9	591.4	591.4	591.7	0.4

¹ Feet above confluence with Fox River

² Elevations computed without consideration of backwater effects from Green Bay

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East River (continued)								
AA	57,320	732	6,589	0.9	592.5	592.5	593.1	0.6
AB	59,341	553	2,091	1.3	594.0	594.0	594.3	0.3
AC	64,067	554	1,727	1.6	595.2	595.2	595.3	0.1
AD	65,297	151	934	2.9	595.7	595.7	595.8	0.1
AE	68,888	457	1,087	2.5	597.6	597.6	597.8	0.2
AF	75,750	967	2,481	1.1	601.3	601.3	601.6	0.3
AG	78,212	1,301	3,328	0.8	602.1	602.1	602.3	0.2
AH	80,193	96	506	5.3	603.2	603.2	603.2	0.0
AI	81,661	401	1,473	1.8	605.2	605.2	605.3	0.2
AJ	84,845	510	1,292	2.1	607.6	607.6	607.6	0.0
AK	85,841	85	720	4.1	608.6	608.6	608.6	0.0
AL	87,628	148	747	3.6	610.0	610.0	610.0	0.0
AM	89,571	381	1,695	1.6	611.2	611.2	611.6	0.4
AN	91,836	457	1,221	2.2	612.3	612.3	612.6	0.3
AO	92,681	120	653	4.1	613.8	613.8	613.8	0.0
AP	94,148	489	1,379	2.0	615.0	615.0	615.1	0.1
AQ	95,961	80	540	5.0	616.9	616.9	616.9	0.0
AR	97,556	592	2,346	1.2	618.4	618.4	618.5	0.0
AS	100,914	1,150	3,992	0.7	619.0	619.0	619.0	0.0
AT	104,174	160	908	2.5	620.2	620.2	620.2	0.0
AU	106,455	380	1,263	1.8	621.3	621.3	621.3	0.0
AV	110,602	405	1,555	1.5	623.7	623.7	623.8	0.0
AW	112,276	78	733	3.1	624.9	624.9	625.0	0.1
AX	112,732	344	1,992	1.2	625.6	625.6	625.7	0.1
AY	114,534	405	1,851	1.2	625.9	625.9	626.0	0.1
AZ	115,339	64	393	5.9	626.4	626.4	626.5	0.1

¹Feet above confluence with Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East River (continued)								
BA	116,436	763	1,906	1.3	627.8	627.8	627.9	0.1
BB	117,533	765	1,995	1.2	628.0	628.0	628.1	0.1
BC	121,353	557	1,300	1.6	629.2	629.2	629.2	0.0
BD	121,800	616	764	2.8	629.9	629.9	629.9	0.0
BE	122,688	585	1,660	1.3	630.9	630.9	630.9	0.0
BF	124,118	818	1,514	1.4	631.4	631.4	631.4	0.0

¹Feet above confluence with Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST RIVER

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East Verlin North Tributary to Willow Creek									
A	425	53	130	0.2	3	606.2	606.2	606.2	0.0
B	588	13	32	0.6	-13	606.2	606.2	606.2	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST VERLIN NORTH TRIBUTARY TO WILLOW CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
East Verlin Tributary to Willow Creek									
A	735	39	73	4.3	18	591.0	591.0	591.0	0.0
B	1,760	25	60	4.0	-6	596.5	596.5	596.5	0.0
C	2,348	170	343	1.6	-2	598.1	598.1	598.1	0.0
D	3,182	39	80	6.7	-10	598.8	598.8	598.8	0.0
E	3,432	170	277	2.0	8	600.4	600.4	600.4	0.0
F	3,816	42	92	5.9	-3	601.8	601.8	601.8	0.0
G	5,013	69	175	3.0	-1	606.2	606.2	606.2	0.0
H	5,630	126	104	5.0	0	608.4	608.4	608.4	0.0
I	6,568	90	218	2.4	4	620.6	620.6	620.6	0.0
J	6,682	20	55	9.4	0	621.5	621.5	621.5	0.0

¹ Feet above confluence with Willow Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

EAST VERLIN TRIBUTARY TO WILLOW CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ellis Creek								
A	144	212	1,454	0.4	650.9	650.9	650.9	0.0
B	742	172	806	0.6	650.9	650.9	650.9	0.0
C	1,210	78	145	3.2	651.1	651.1	651.1	0.0
D	1,533	62	80	5.4	652.8	652.8	652.8	0.0
E	1,711	69	107	4.1	654.4	654.4	654.4	0.0
F	1,996	59	86	4.8	656.2	656.2	656.2	0.0
G	2,439	71	118	3.5	660.0	660.0	660.0	0.0
H	2,921	137	845	0.3	669.9	669.9	669.9	0.0
I	3,731	80	110	2.3	670.1	670.1	670.1	0.0

¹Feet above upstream end of culvert at Auto Plaza Drive

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

ELLIS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Fox River								
A	3,076	604	15,597	2.2	585.7	584.1 ²	584.1 ²	0.0
B	6,119	515	14,870	2.3	585.7	584.2 ²	584.2 ²	0.0
C	9,196	699	17,355	1.8	585.7	584.7 ²	584.7 ²	0.0
D	10,658	614	16,216	1.9	585.7	584.7 ²	584.7 ²	0.0
E	13,207	540	15,369	2.0	585.7	584.8 ²	584.8 ²	0.0
F	14,982	615	17,770	1.7	585.7	584.9 ²	584.9 ²	0.0
G	18,584	1,067	29,370	1.1	585.7	585.0 ²	585.0 ²	0.0
H	22,084	1,413	22,815	1.5	585.7	585.0 ²	585.0 ²	0.0
I	26,962	2,483	30,720	1.0	585.7	585.1 ²	585.1 ²	0.0
J	40,215	1,042	9,264	3.2	585.7	585.3 ²	585.3 ²	0.0
K	40,497	983	21,852	1.4	589.3	589.3	589.3	0.0
L	53,939	1,032	11,248	2.7	589.9	589.9	589.9	0.0
M	66,171	1,820	14,712	2.0	590.7	590.6	590.7	0.0
N	71,996	537	6,388	4.7	591.5	591.5	591.5	0.0
O	72,693	565	8,266	3.6	598.5	598.5	598.5	0.0
P	78,931	530	7,363	4.0	599.2	599.2	599.2	0.0
Q	86,403	478	6,833	4.1	600.4	600.4	600.4	0.0
R	94,903	454	5,682	5.0	601.4	601.4	601.5	0.1
S	103,310	535	7,444	3.8	602.7	602.5	602.7	0.2

¹Feet above mouth

²Elevations computed without consideration of backwater effects from Green Bay

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

FOX RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Lancaster Creek Tributary								
A	371	60	74	2.8	618.3	618.3	618.3	0.0
B	733	60	63	3.3	620.7	620.7	620.7	0.0
C	938	105	94	2.1	622.2	622.2	622.2	0.0
D	1,178	76	136	2.3	623.7	623.7	623.7	0.0
E	1,383	90	72	2.8	625.7	625.7	625.7	0.0
F	1,786	41	38	5.1	630.2	630.2	630.2	0.0

¹Feet above Rockwell Road

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

LANCASTER CREEK TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Lancaster Creek									
A	122	125	634	2.4	10	586.1	586.1 ²	586.1	0.0
B	1.032	215	489	3.1	114	586.4	586.4	586.4	0.0
C	1.342	70	374	4.0	-41	587.1	587.1	587.1	0.0
D	2.294	1,098	652	1.8	-827	588.9	588.9	588.9	0.0
E	3.074	343	1,178	1.0	-19	590.3	590.3	590.3	0.0
F	3.884	368	1,057	1.1	5	590.8	590.8	590.8	0.0
G	4.424	140	412	2.9	0	591.3	591.3	591.3	0.0
H	4.759	220	734	1.6	23	592.6	592.6	592.6	0.0
I	5.359	64	164	6.5	-31	592.3	592.3	592.3	0.0
J	5.619	30	239	4.5	-2	594.6	594.6	594.6	0.0
K	5.709	45	251	4.3	-19	594.7	594.7	594.7	0.0
L	5.859	77	286	3.7	-50	595.0	595.0	595.0	0.0
M	6.549	390	1,594	0.7	-4	596.0	596.0	596.0	0.0
N	7.629	408	961	1.1	-87	596.2	596.2	596.2	0.0
O	7.929	65	214	5.0	-60	596.3	596.3	596.3	0.0
P	8.291	651	2,014	0.5	62	597.1	597.1	597.1	0.0
Q	8.726	435	1,063	0.9	110	597.2	597.2	597.2	0.0
R	9.161	415	395	2.4	19	597.3	597.3	597.3	0.0
S	10.331	327	596	1.6	-77	599.8	599.8	599.8	0.0
T	11.501	219	400	2.4	-154	601.6	601.6	601.6	0.0
U	12.671	110	486	1.9	-80	603.7	603.7	603.7	0.0
V	13.811	270	548	1.7	81	605.3	605.3	605.3	0.0
W	15.281	192	237	4.0	46	608.6	608.6	608.6	0.0
X	15.981	28	186	4.4	-12	611.0	611.0	611.0	0.0
Y	16.242	175	550	1.5	-2	611.9	611.9	611.9	0.0
Z	16.732	40	192	4.3	-35	612.4	612.4	612.4	0.0

¹Feet above confluence with Duck Creek

²Elevations without considering Backwater from Duck Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

LANCASTER CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Lancaster Creek (continued)									
AA	17.224	135	239	3.4	-6	613.3	613.3	613.3	0.0
AB	18.184	170	415	2.0	-7	615.6	615.6	615.6	0.0
AC	19.564	88	172	4.8	-80	618.5	618.5	618.5	0.0
AD	20.734	370	642	1.3	-44	622.8	622.8	622.8	0.0

¹Feet above confluence with Duck Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

LANCASTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mahon Creek								
A	1,199	89	361	3.3	591.6	591.6	591.6	0.0
B	1,391	170	628	1.8	592.5	592.5	592.5	0.0
C	1,763	180	495	2.2	593.2	593.2	593.2	0.0
D	2,097	135	272	4.1	593.5	593.5	593.5	0.0
E	2,419	123	188	5.9	595.0	595.0	595.0	0.0
F	2,627	252	364	3.4	597.5	597.5	597.5	0.0
G	2,974	197	351	3.6	599.7	599.7	599.7	0.0
H	3,469	291	695	1.6	602.6	602.6	602.6	0.0
I	3,680	197	365	3.7	604.4	604.4	604.4	0.0
J	4,117	237	518	2.2	605.8	605.8	605.8	0.0
K	4,320	195	450	2.4	606.4	606.4	606.4	0.0
L	4,610	140	326	3.5	608.2	608.2	608.2	0.0
M	5,291	225	344	3.2	614.7	614.7	614.7	0.0
N	5,645	182	420	2.6	620.7	620.7	620.7	0.0
O	6,098	148	237	4.1	625.5	625.5	625.5	0.0
P	6,301	40	196	6.0	627.3	627.3	627.3	0.0
Q	6,459	167	909	1.1	632.8	632.8	632.8	0.0
R	6,711	77	581	2.7	632.9	632.9	632.9	0.0
S	6,868	34	1,020	3.7	636.5	636.5	636.5	0.0
T	6,907	125	1,702	1.0	636.8	636.8	636.8	0.0
U	7,954	147	279	3.3	641.2	641.2	641.2	0.0
V	8,499	152	366	2.5	647.3	647.3	647.3	0.0
W	9,310	139	259	3.6	654.5	654.5	654.5	0.0
X	9,564	171	440	2.2	657.5	657.5	657.5	0.0
Y	10,031	138	357	2.7	661.2	661.2	661.2	0.0
Z	10,210	46	159	8.2	661.9	661.9	661.9	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

MAHON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Mahon Creek (continued)								
AA	10,410	139	652	1.5	666.1	666.1	666.1	0.0
AB	10,703	177	327	3.0	666.8	666.8	666.8	0.0
AC	11,430	109	310	3.0	677.1	677.1	677.1	0.0
AD	12,488	138	358	2.3	687.0	687.0	687.0	0.0
AE	13,027	176	384	2.1	694.6	694.6	694.6	0.0
AF	13,531	94	212	3.9	702.2	702.2	702.2	0.0
AG	13,792	107	191	4.3	704.9	704.9	704.9	0.0
AH	14,068	74	172	4.8	711.5	711.5	711.5	0.0
AI	14,799	55	125	5.8	736.9	736.9	736.9	0.0
AJ	15,530	41	80	6.6	749.9	749.9	749.9	0.0
AK	15,694	57	129	4.1	752.4	752.4	752.4	0.0
AL	15,945	92	847	0.5	764.5	764.5	764.5	0.0
AM	16,771	48	82	4.9	766.6	766.6	766.6	0.0
AN	17,148	60	136	3.0	773.0	773.0	773.0	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

MAHON CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Middle Branch Little Suamico River									
A	138	8	29	8.4	-6	795.6	795.6	795.6	0.0
B	655	60	120	4.1	28	799.0	799.0	799.0	0.0
C	1.423	34	55	7.4	14	800.3	800.3	800.3	0.0
D	5.115	82	106	2.1	-12	809.8	809.8	809.8	0.0

¹ Feet above Limit of Detailed Study*

* Limit of Detailed Study is approximately 40 feet downstream of Summit Street

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

MIDDLE BRANCH LITTLE SUAMICO RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Neshota River								
A	6,019	115	1,036	4.0	687.7	687.7	687.7	0.0
B	6,072	190	1,687	2.8	687.9	687.9	687.9	0.0
C	8,765	715	4,025	0.0	689.7	689.7	689.7	0.0
D	8,818	760	3,110	1.3	689.7	689.7	689.7	0.0
E	10,085	940	4,180	1.2	690.1	690.1	690.1	0.0
F	12,038	385	1,545	2.9	690.6	690.6	690.6	0.0
G	14,520	245	604	7.3	696.5	696.5	696.5	0.0
H	14,573	335	1,087	4.1	698.2	698.2	698.2	0.0
I	16,738	530	3,000	1.5	700.7	700.7	700.7	0.0
J	18,322	90	870	4.6	701.4	701.4	701.4	0.0
K	18,374	70	1,150	3.5	701.4	701.4	701.4	0.0
L	18,638	240	3,820	1.1	702.1	702.1	702.1	0.0
M	18,691	310	4,860	0.8	702.2	702.2	702.2	0.0
N	20,328	730	4,260	0.9	702.5	702.5	702.5	0.0
O	22,915	780	4,600	0.9	702.9	702.9	702.9	0.0
P	24,869	80	370	10.8	702.9	702.9	702.9	0.0
Q	24,922	60	390	10.2	703.7	703.7	703.7	0.0

¹ Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY
**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

NESHOTA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
North Branch Ashwaubenon Creek								
A	83,025	264	2,129	0.4	661.0	661.0	661.0	0.0
B	86,422	226	747	1.2	661.2	661.2	661.2	0.0
C	88,371	202	413	2.1	664.2	664.2	664.2	0.0
D	89,207	223	290	3.3	665.8	665.8	665.8	0.0
E	90,139	198	280	3.1	668.3	668.3	668.3	0.0
F	91,304	234	508	1.7	670.5	670.5	670.5	0.0
G	92,927	278	628	1.4	674.5	674.5	674.5	0.0
H	93,470	265	371	2.3	674.9	674.9	674.9	0.0
I	95,592	190	418	2.4	681.0	681.0	681.0	0.0

¹ Feet above mouth of Ashwaubenon Creek at Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

NORTH BRANCH ASHWAUBENON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
North Branch Bakers Creek								
A	264	114	127	1.5	657.8	657.8	657.8	0.0
B	917	110	55	3.4	659.9	659.9	659.9	0.0
C	1,507	155	174	1.9	662.8	662.8	662.8	0.0
D	2,014	138	77	2.5	664.6	664.6	664.6	0.0

¹Feet above confluence with Bakers Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

NORTH BRANCH BAKERS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
North Branch Willow Creek								
A	77	42	490	4.3	629.4	629.4	629.4	0.0
B	487	47	1,385	1.5	645.1	645.1	645.1	0.0
C	760	153	2,879	0.4	645.9	645.9	645.9	0.0
D	2,393	192	811	1.2	646.0	646.0	646.0	0.0
E	2,903	256	805	0.9	652.1	652.1	652.1	0.0
F	3,393	159	645	1.3	654.5	654.5	654.5	0.0
G	3,891	193	289	2.5	654.8	654.8	654.8	0.0
H	5,996	135	197	3.6	672.6	672.6	672.6	0.0
I	6,283	180	185	3.9	678.4	678.4	678.4	0.0
J	9,254	135	154	3.8	711.6	711.6	711.6	0.0
K	12,472	110	180	2.8	735.8	735.8	735.8	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

NORTH BRANCH WILLOW CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
North Tributary South Branch Ashwaubenon Creek								
A	90,820	119	304	1.2	663.7	663.7	663.7	0.0
B	91,222	86	127	2.8	664.3	664.3	664.3	0.0
C	91,677	88	110	3.2	667.9	667.9	667.9	0.0
D	92,092	109	114	3.1	670.5	670.5	670.5	0.0
E	92,798	33	134	5.1	674.7	674.7	674.7	0.0

¹ Feet above confluence of Ashwaubenon Creek at Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

NORTH TRIBUTARY SOUTH BRANCH ASHWAUBENON CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Oneida Creek								
A	3	206	597	0.8	596.0	592.9 ²	592.9 ²	0.0
B	677	283	247	2.0	596.6	596.6	596.6	0.0
C	1,199	145	874	2.5	600.3	600.3	600.3	0.0
D	1,432	112	233	2.3	603.0	603.0	603.0	0.0
E	1,668	116	220	2.3	604.6	604.6	604.6	0.0
F	2,120	160	307	1.6	606.2	606.2	606.2	0.0
G	2,358	115	241	2.1	607.9	607.9	607.9	0.0
H	2,825	117	199	2.5	611.0	611.0	611.0	0.0
I	3,278	140	179	2.8	614.0	614.0	614.0	0.0
J	3,737	128	178	2.8	619.9	619.9	619.9	0.0
K	4,106	111	131	1.6	621.3	621.3	621.3	0.0
L	4,527	52	47	3.9	625.6	625.6	625.6	0.0
M	5,314	78	79	2.3	633.8	633.8	633.8	0.0
N	5,614	92	81	2.2	636.2	636.2	636.2	0.0
O	5,951	59	61	3.2	639.3	639.3	639.3	0.0

¹Feet above confluence with Duck Creek

²Elevations computed without consideration of backwater effects from Duck Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

ONEIDA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pioneer Tributary to Duck Creek								
A	192	223	643	0.2	590.7	588.0 ²	588.0 ²	0.0
B	732	22	150	1.5	590.7	588.3 ²	588.3 ²	0.0
C	1,046	38	1,482	0.4	595.7	595.7	595.7	0.0

¹Feet above confluence with Duck Creek

²Elevations computed without consideration of backwater effects from Duck Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

PIONEER TRIBUTARY TO DUCK CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Plum Creek									
A	645	120	971	5.5	26	601.8	600.5 ²	600.5 ²	0.0
B	700	117	943	5.5	21	601.8	600.5 ²	600.5 ²	0.0
C	813	309	1,316	5.0	-10	601.8	600.8 ²	600.8 ²	0.0
D	4,422	218	913	7.8	0	608.1	608.1	608.1	0.0
E	10,082	358	1,305	3.9	22	615.9	615.9	615.9	0.0
F	12,459	370	1,885	2.7	-36	619.3	619.3	619.3	0.0
G	14,381	239	1,025	3.5	2	621.7	621.7	621.7	0.0
H	15,504	90	555	6.5	-66	624.7	624.7	624.7	0.0
I	15,703	69	510	7.0	10	625.3	625.3	625.3	0.0

¹Feet above mouth

²Elevations computed without consideration of backwater effects from Fox River

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

PLUM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sorensens Creek Tributary								
A	293	64	192	7.5	651.2	651.2	651.2	0.00
B	688	95	242	6.0	659.6	659.6	659.6	0.00
C	1.126	98	234	6.2	671.2	671.2	671.2	0.00
D	1.716	77	197	7.3	689.0	689.0	689.0	0.00
E	2.057	173	301	4.8	693.3	693.3	693.3	0.00
F	2.851	176	481	3.0	698.0	698.0	698.0	0.00
G	3.425	180	330	4.4	699.8	699.8	699.8	0.00
H	3.812	185	461	3.1	701.4	701.4	701.4	0.00
I	4.786	22	171	8.4	708.0	708.0	708.0	0.00
J	5.531	155	607	2.4	709.5	709.5	709.5	0.00
K	6.361	161	505	2.9	711.0	711.0	711.0	0.00
L	6.924	180	581	2.5	712.4	712.4	712.4	0.00
M	7.201	164	579	2.5	712.9	712.9	712.9	0.00
N	7.406	147	454	3.2	713.9	713.9	713.9	0.00
O	7.975	191	517	2.8	715.9	715.9	715.9	0.00
P	8.757	130	340	4.2	719.3	719.3	719.3	0.00
Q	9.978	150	334	4.3	726.3	726.3	726.3	0.00
R	10.243	148	1129	1.3	735.4	735.4	735.4	0.00
S	10.561	179	1983	0.7	739.0	739.0	739.0	0.00
T	10.920	276	1951	0.7	739.4	739.4	739.4	0.00
U	11.281	119	711	2.0	739.4	739.4	739.4	0.00
V	11.538	194	1115	1.3	741.7	741.7	741.7	0.00
W	12.669	192	752	1.9	741.9	741.9	741.9	0.00
X	13.340	144	407	3.5	742.3	742.3	742.3	0.00
Y	13.811	161	378	3.8	743.4	743.4	743.4	0.00
Z	14.809	241	460	3.1	747.3	747.3	747.3	0.00

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SORENSONS CREEK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sorensens Creek								
A	623	146	1,696	2.8	601.9	601.9	601.9	0.0
B	1,421	78	334	5.3	602.5	602.5	602.5	0.0
C	2,661	88	312	5.7	606.2	606.2	606.2	0.0
D	3,170	321	730	2.4	609.9	609.9	609.9	0.0
E	4,188	284	449	4.0	612.3	612.3	612.3	0.0
F	5,002	159	697	3.9	615.3	615.3	615.3	0.0
G	5,592	60	263	6.9	617.6	617.6	617.6	0.0
H	6,383	298	818	2.2	621.4	621.4	621.4	0.0
I	7,158	240	574	2.1	622.6	622.6	622.6	0.0
J	9,950	258	340	3.5	629.3	629.3	629.3	0.0
K	11,147	99	244	4.9	634.6	634.6	634.6	0.0
L	11,851	227	352	3.3	637.8	637.8	637.8	0.0
M	12,608	75	163	7.2	644.6	644.6	644.6	0.0
N	13,077	142	515	3.0	648.5	648.5	648.5	0.0
O	14,500	61	727	7.3	654.1	654.1	654.1	0.0
P	15,857	93	271	4.5	666.4	666.4	666.4	0.0
Q	16,400	128	303	3.9	668.7	668.7	668.7	0.0
R	17,410	208	525	2.2	674.4	674.4	674.4	0.0
S	19,368	204	343	3.4	680.4	680.4	680.4	0.0

¹ Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SORENSONS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
South Branch Ashwaubenon Creek								
A	82,530	493	4,741	0.3	661.0	661.0	661.0	0.0
B	83,171	310	3,148	0.4	661.0	661.0	661.0	0.0
C	83,993	256	2,362	0.6	661.0	661.0	661.0	0.0
D	84,674	352	2,688	0.5	661.0	661.0	661.0	0.0
E	85,395	243	1,897	0.7	661.0	661.0	661.0	0.0
F	86,226	266	2,549	0.5	663.2	663.2	663.2	0.0
G	87,035	447	3,649	0.4	663.2	663.2	663.2	0.0
H	88,088	337	2,431	0.5	663.3	663.3	663.3	0.0
I	88,901	246	1,410	0.9	663.3	663.3	663.3	0.0
J	89,593	242	1,345	1.0	663.4	663.4	663.4	0.0
K	90,516	193	572	2.3	663.7	663.7	663.7	0.0
L	91,384	268	834	1.6	665.0	665.0	665.0	0.0
M	92,345	230	649	2.0	666.0	666.0	666.0	0.0
N	93,221	147	558	2.3	668.3	668.3	668.3	0.0
O	93,980	128	498	2.6	670.1	670.1	670.1	0.0
P	94,526	190	669	2.0	670.8	670.8	670.8	0.0

¹ Feet above mouth of Ashwaubenon Creek at Fox River

TABLE 7

**FEDERAL EMERGENCY MANAGEMENT AGENCY
BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SOUTH BRANCH ASHWAUBENON CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
South Branch Little Suamico River									
A	384	345	1,330	1.4	16	784.9	784.9	784.9	0.0
B	926	84	312	2.2	41	785.4	785.4	785.4	0.0
C	1,393	870	1,633	1.3	192	785.7	785.7	785.7	0.0
D	2,784	186	223	9.5	-23	791.7	791.7	791.7	0.0
E	3,815	275	388	5.1	100	795.8	795.8	795.8	0.0
F	5,498	156	228	8.7	128	800.3	800.3	800.3	0.0
G	5,934	291	565	3.1	139	801.4	801.4	801.4	0.0
H	6,776	199	326	5.8	87	802.6	802.6	802.6	0.0
I	7,160	18	86	7.3	5	804.6	804.6	804.6	0.0
J	7,790	174	252	7.3	86	807.8	807.8	807.8	0.0
K	8,289	301	301	6.0	250	809.0	809.0	809.0	0.0
L	8,644	32	148	7.8	-16	809.8	809.8	809.8	0.0
M	9,374	595	622	4.1	109	810.8	810.8	810.8	0.0
N	10,444	1,329	2,600	1.0	112	811.1	811.1	811.1	0.0

¹Feet above Limit of Detailed Study*

* Limit of Detailed Study is approximately 85 feet downstream of Corporate Way

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SOUTH BRANCH LITTLE SUAMICO RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
South Tributary to Willow Creek								
A	882	754	1,790	0.2	590.2	587.4 ²	587.4 ²	0.0
B	1,582	858	1,085	0.4	590.2	587.4 ²	587.4 ²	0.0
C	2,152	225	369	0.8	590.2	587.5 ²	587.5 ²	0.0
D	2,642	238	99	3.0	590.2	587.8 ²	587.8 ²	0.0
E	3,302	354	202	1.4	590.2	589.6 ²	589.6 ²	0.0
F	3,892	76	95	3.1	590.5	590.5	590.5	0.0
G	4,732	78	210	1.0	591.1	591.1	591.1	0.0
H	5,412	30	69	2.8	591.3	591.3	591.3	0.0
I	5,922	32	72	2.7	592.3	592.3	592.3	0.0
J	6,237	40	130	1.5	598.7	598.7	598.7	0.0

¹Feet above mouth

²Elevation computed without consideration of backwater effects from Willow Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SOUTH TRIBUTARY TO WILLOW CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spring Creek Tributary A Ditch								
A	42	59	171	1.4	735.9	735.9	735.9	0.0
B	285	19	33	6.9	738.1	738.1	738.1	0.0
C	551	34	111	2.1	739.5	739.5	739.5	0.0

¹Feet above confluence with Spring Creek Tributary A

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SPRING CREEK TRIBUTARY A DITCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spring Creek Tributary A								
A	356	162	1,213	0.5	703.0	703.0	703.0	0.0
B	1,384	221	1,385	0.4	705.7	705.7	705.7	0.0
C	2,344	130	181	3.1	706.1	706.1	706.1	0.0
D	2,698	113	341	1.8	707.7	707.7	707.7	0.0
E	3,051	143	436	1.3	708.4	708.4	708.4	0.0
F	3,552	100	189	3.0	711.1	711.1	711.1	0.0
G	4,188	71	153	3.7	714.0	714.0	714.0	0.0
H	4,581	93	218	2.8	717.3	717.3	717.3	0.0
I	5,146	89	144	3.8	721.0	721.0	721.0	0.0
J	5,694	169	382	1.4	726.2	726.2	726.2	0.0
K	6,046	95	287	1.9	727.0	727.0	727.0	0.0
L	6,649	108	453	1.3	734.5	734.5	734.5	0.0
M	6,935	37	337	1.8	736.1	736.1	736.1	0.0
N	7,309	144	337	0.9	737.0	737.0	737.0	0.0
O	7,693	120	179	1.7	737.3	737.3	737.3	0.0
P	8,031	57	104	5.2	739.3	739.3	739.3	0.0
Q	8,283	100	293	1.8	743.4	743.4	743.4	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SPRING CREEK TRIBUTARY A

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spring Creek Tributary B								
A	329	51	79	3.8	734.3	734.3	734.3	0.0
B	546	54	91	3.2	736.6	736.6	736.6	0.0
C	969	37	47	6.3	742.5	742.5	742.5	0.0
D	1,345	45	66	4.5	747.6	747.6	747.6	0.0
E	1,694	42	63	3.2	750.7	750.7	705.7	0.0
F	2,160	39	49	4.1	753.5	753.5	753.5	0.0
G	2,539	60	110	2.5	756.1	756.1	756.1	0.0
H	2,801	240	1,417	0.3	758.9	758.9	758.9	0.0
I	3,362	260	241	0.8	759.6	759.6	759.7	0.1

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SPRING CREEK TRIBUTARY B

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spring Creek								
A	538	563	2,699	2.0	595.4	595.4	595.4	0.0
B	1,246	214	680	8.3	595.9	595.9	595.9	0.0
C	1,465	236	2,183	3.0	600.3	600.3	600.3	0.0
D	1,972	375	8,960	1.5	601.7	601.7	601.7	0.0
E	2,543	431	3,140	0.9	602.0	602.0	602.0	0.0
F	3,788	232	737	2.8	602.4	602.4	602.4	0.0
G	4,062	146	557	3.7	603.2	603.2	603.2	0.0
H	4,332	544	2,963	0.7	605.0	605.0	605.0	0.0
I	4,761	284	1,308	2.0	605.0	605.0	605.0	0.0
J	5,880	331	873	2.4	608.3	608.3	608.3	0.0
K	7,717	352	780	2.6	614.7	614.7	614.7	0.0
L	8,506	197	1,250	2.2	619.4	619.4	619.4	0.0
M	9,085	420	2,673	0.8	624.2	624.2	624.2	0.0
N	9,797	253	951	2.2	624.2	624.2	624.2	0.0
O	10,861	305	622	3.4	626.1	626.1	626.1	0.0
P	11,697	65	630	7.6	629.4	629.4	629.4	0.0
Q	12,406	223	1,585	1.3	637.5	637.5	637.5	0.0
R	13,503	267	929	2.2	637.7	637.7	637.7	0.0
S	14,584	66	436	7.4	644.9	644.9	644.9	0.0
T	15,300	399	2,282	1.0	652.9	652.9	652.9	0.0
U	15,779	232	675	4.4	654.9	654.9	654.9	0.0
V	16,392	209	434	4.7	670.0	670.0	670.0	0.0
W	17,560	84	832	7.6	693.0	693.0	693.0	0.0
X	17,908	162	2,383	1.4	703.0	703.0	703.0	0.0
Y	19,048	105	529	3.1	703.0	703.0	703.0	0.0
Z	20,440	121	282	5.5	705.6	705.6	705.6	0.0

¹ Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SPRING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spring Creek (continued)								
AA	20,877	122	397	3.9	708.9	708.9	708.9	0.0
AB	21,170	146	533	2.9	711.2	711.2	711.2	0.0
AC	22,622	134	438	3.5	714.0	714.0	714.0	0.0
AD	23,090	119	399	3.9	717.0	717.0	717.0	0.0
AE	24,825	136	561	3.1	720.5	720.5	720.5	0.0
AF	25,202	163	1,653	1.2	727.8	727.8	727.8	0.0
AG	26,647	177	551	2.9	728.4	728.4	728.4	0.0
AH	26,959	175	314	4.9	730.3	730.3	730.3	0.0
AI	28,153	141	527	2.7	736.6	736.6	736.6	0.0
AJ	28,910	116	264	5.3	739.0	739.0	739.0	0.0
AK	29,248	165	638	2.2	740.9	740.9	740.9	0.0
AL	30,617	127	256	5.5	745.0	745.0	745.0	0.0
AM	31,131	184	1,163	1.2	750.7	750.7	750.7	0.0
AN	33,115	131	368	3.8	751.2	751.2	751.2	0.0
AO	34,332	155	224	6.2	755.2	755.2	755.2	0.0
AP	34,757	195	440	3.2	757.5	757.5	757.5	0.0
AQ	36,769	291	503	3.7	763.9	763.9	763.9	0.0
AR	37,486	218	641	1.1	770.0	770.0	770.0	0.0
AS	38,236	223	228	1.2	770.9	770.9	770.9	0.0
AT	38,823	97	153	1.9	775.4	775.4	775.4	0.0
AU	39,200	177	566	0.6	779.4	779.4	779.4	-0.1
AV	40,051	145	516	0.6	783.5	783.5	783.5	0.0

¹ Feet above mouth

TABLE 7

**FEDERAL EMERGENCY MANAGEMENT AGENCY
BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SPRING CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Suamico River									
A	1,054	473	1,877	2.2	310	585.8	584.1 ²	584.1 ²	0.0
B	3,611	149	1,102	3.7	-142	585.8	584.5 ²	584.5 ²	0.0
C	6,126	366	1,783	2.3	146	585.8	585.3 ²	585.3 ²	0.0
D	7,792	721	1,541	2.6	583	585.8	585.7 ²	585.7 ²	0.0
E	8,015	307	2,247	1.8	-127	586.6	586.6	586.6	0.0
F	13,473	162	936	4.3	18	587.3	587.3	587.3	0.0
G	13,866	228	1,044	3.9	38	587.8	587.8	587.8	0.0
H	14,533	126	993	4.1	-32	588.5	588.5	588.5	0.0
I	14,717	100	909	4.5	5	589.3	589.3	589.3	0.0
J	15,529	210	1,688	2.4	-40	591.2	591.2	591.2	0.0
K	17,153	433	1,664	2.2	-58	591.6	591.6	591.6	0.0
L	18,759	884	2,979	1.2	370	592.4	592.4	592.4	0.0
M	19,595	651	2,666	1.4	130	596.1	596.1	596.1	0.0
N	20,778	539	1,625	2.3	-2	596.3	596.3	596.3	0.0
O	22,814	96	943	3.9	-80	597.4	597.4	597.4	0.0
P	23,005	140	1,087	3.4	-151	597.9	597.9	597.9	0.0
Q	25,075	398	2,140	1.7	51	599.1	599.1	599.1	0.0
R	27,732	844	1,308	2.8	713	601.8	601.8	601.8	0.0
S	29,034	630	1,977	1.9	152	605.6	605.6	605.6	0.0
T	33,697	72	498	7.7	-196	609.5	609.5	609.5	0.0
U	34,083	250	868	4.2	-3	611.1	611.1	611.1	0.0
V	38,838	754	1,314	2.5	666	617.3	617.3	617.3	0.0
W	40,990	161	640	5.2	-24	623.7	623.7	623.7	0.0
X	42,265	122	528	6.3	-80	626.4	626.4	626.4	0.0
Y	44,189	75	294	11.2	-37	635.5	635.5	635.5	0.0
Z	45,614	83	499	6.6	-13	642.2	642.2	642.2	0.0

¹Feet above mouth

²Elevations computed without consideration of backwater effects from Green Bay

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

SUAMICO RIVER

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 1 to Dutchman Creek Southwest Tributary									
A	630	88	56	2.5	-13	642.1	642.1	642.1	0.0
B	1,405	42	39	3.6	-12	649.1	649.1	649.1	0.0
C	1,945	36	45	3.1	-31	656.6	656.6	656.6	0.0
D	2,265	47	57	2.5	-4	660.3	660.3	660.3	0.0
E	2,815	35	26	4.9	-5	664.5	664.5	664.5	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

**TRIBUTARY 1 TO DUTCHMAN CREEK SOUTHWEST
TRIBUTARY**

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 2 to Dutchman Creek Southwest Tributary									
A	0	310	565	0.3	101	642.1	642.1	642.1	0.0
B	770	57	37	4.1	-15	646.7	646.7	646.7	0.0
C	2,550	52	53	2.6	-5	665.6	665.6	665.6	0.0

¹ Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

TRIBUTARY 2 TO DUTCHMAN CREEK SOUTHWEST TRIBUTARY

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 3 to Dutchman Creek Southwest Tributary									
A	400	210	159	1.5	23	649.0	649.0	649.0	0.0
B	1,950	81	84	2.4	5	663.7	663.7	663.7	0.0

¹Feet above mouth

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

**TRIBUTARY 3 TO DUTCHMAN CREEK SOUTHWEST
TRIBUTARY**

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
TROUT CREEK								
A-D	*	*	*	*	*	*	*	*
E	6,389	205	390	4.1	628.8	628.8	628.8	0.0
F	12,672	370	1,090	1.5	640.1	640.1	640.1	0.0
G	15,893	60	180	9.0	649.7	649.7	649.7	0.0
H	15,998	10	130	12.3	657.7	657.7	657.7	0.0
I	16,051	50	685	2.3	660.7	660.7	660.7	0.0
J	16,157	230	2,465	0.6	663.2	663.2	663.2	0.0
K	16,262	370	4,530	0.3	663.2	663.2	663.2	0.0
L	17,160	365	3,870	0.4	663.2	663.2	663.2	0.0
M	23,179	700	520	2.9	663.4	663.4	663.4	0.0
N	24,394	70	330	4.5	667.9	667.9	667.9	0.0
O	24,605	215	1,345	1.1	672.4	672.4	672.4	0.0
P	29,779	400	445	3.4	676.0	676.0	676.0	0.0
Q	29,885	480	1,155	1.3	679.1	679.1	679.1	0.0
R	36,115	280	655	2.3	687.6	687.6	687.6	0.0
S	39,917	200	860	1.3	693.3	693.3	693.3	0.0
T	44,510	90	275	4.0	702.2	702.2	702.2	0.0
U	44,669	25	165	6.7	702.9	702.9	702.9	0.0
V	46,517	70	150	4.7	706.8	706.8	706.8	0.0
W	49,474	45	100	7.0	716.4	716.4	716.4	0.0
X	49,579	120	105	6.7	719.4	719.4	719.4	0.0

¹Feet above confluence with Duck Creek

*Data not shown because flooding is influenced by confluence with Duck Creek

TABLE 7

**FEDERAL EMERGENCY MANAGEMENT AGENCY
BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

TROUT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Unnamed Tributary to Green Bay								
A	283	61	112	2.5	591.0	591.0	591.0	0.0
B	429	37	90	4.0	594.4	594.4	594.4	0.0
C	665	47	43	4.1	601.3	601.3	601.3	0.0
D	901	41	55	3.2	604.9	604.9	604.9	0.0
E	1,154	62	47	3.7	610.9	610.9	610.9	0.0
F	1,428	68	76	2.3	613.8	613.8	613.8	0.0
G	2,135	81	78	2.3	624.1	624.1	624.1	0.0

¹Feet above confluence with Green Bay

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

UNNAMED TRIBUTARY TO GREEN BAY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Vanguard Way Tributary to Lancaster Creek								
A	184	22	20	9.2	613.5	613.5	613.5	0.0
B	398	16	19	9.7	618.5	618.5	618.5	0.0
C	602	21	43	4.3	623.2	623.2	623.2	0.0
D	755	16	25	7.3	628.8	628.8	628.8	0.0

¹Feet above confluence with Lancaster Creek

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

VANGUARD WAY TRIBUTARY TO LANCASTER CREEK

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WIDTH REDUCED FROM PRIOR STUDY	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
West Verlin Tributary to Willow Creek									
A	85	271	1,638	0.2	-17	589.9	587.3 ²	587.3 ²	0.0
B	1,038	102	286	1.2	-6	589.9	587.3 ²	587.3 ²	0.0
C	1,516	185	1,133	0.6	-1	589.9	589.0 ²	589.0 ²	0.0
D	1,722	40	345	2.4	3	589.9	589.1 ²	589.1 ²	0.0
E	2,395	39	287	2.0	3	590.5	590.5	590.5	0.0
F	2,635	60	195	1.5	-26	591.0	591.0	591.0	0.0
G	3,595	26	651	2.9	-4	592.5	592.5	592.5	0.0
H	4,592	52	337	2.5	9	594.5	594.5	594.5	0.0
I	5,500	98	778	1.6	-1	596.6	596.6	596.6	0.0

¹ Feet above mouth at Willow Creek

² Elevations computed without consideration of backwater effects

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

WEST VERLIN TRIBUTARY TO WILLOW CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Willow Creek								
A	1,558	287	1,304	1.5	589.9	587.3 ²	587.3 ²	0.0
B	2,571	1,208	4,284	0.5	589.9	588.7 ²	588.7 ²	0.0
C	3,721	1,058	957	2.0	589.9	589.7 ²	589.7 ²	0.0
D	4,416	1,119	4,393	0.4	590.3	590.3	590.3	0.0
E	5,073	881	1,582	1.2	590.3	590.3	590.3	0.0
F	5,362	878	2,470	0.8	590.5	590.5	590.5	0.0
G	6,515	641	993	1.9	590.8	590.8	590.8	0.0
H	6,876	219	333	5.1	592.6	592.6	592.6	0.0
I	8,645	54	189	8.9	596.4	596.4	596.4	0.0
J	9,345	64	229	7.4	600.1	600.1	600.1	0.0
K	9,706	131	319	5.3	603.9	603.9	603.9	0.0
L	10,175	252	691	2.4	606.5	606.5	606.5	0.0
M	11,247	222	533	3.2	608.3	608.3	608.3	0.0
N	12,204	315	711	2.3	610.8	610.8	610.8	0.0
O	13,099	171	463	3.5	612.2	612.2	612.2	0.0
P	14,727	265	747	2.2	616.3	616.3	616.3	0.0
Q	16,400	350	493	3.3	619.6	619.6	619.6	0.0
R	16,575	316	650	2.5	620.5	620.5	620.5	0.0
S	17,239	330	664	2.4	622.2	622.2	622.2	0.0
T	17,648	199	851	1.9	624.2	624.2	624.2	0.0
U	17,909	198	676	2.3	625.1	625.1	625.1	0.0
V	18,542	185	758	2.1	627.1	627.1	627.1	0.0
W	18,849	140	490	3.1	628.6	628.6	628.6	0.0
X	19,580	226	789	1.1	629.4	629.4	629.4	0.0
Y	20,562	69	586	1.5	643.4	643.4	643.4	0.0
Z	21,669	272	1,222	0.7	643.5	643.5	643.5	0.0

¹Feet above mouth

²Elevations computed without consideration of backwater effects from East River.

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLOW CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY ²	WITH FLOODWAY	INCREASE
Willow Creek (continued)								
AA	22,424	201	367	2.3	643.8	643.8	643.8	0.0
AB	23,242	95	171	4.9	650.0	650.0	650.0	0.0
AC	23,600	275	3,135	0.3	665.3	665.3	665.3	0.0
AD	24,549	116	177	4.6	667.5	667.5	667.5	0.0
AE	24,904	165	255	3.2	673.6	673.6	673.6	0.0
AF	25,870	247	382	2.1	680.3	680.3	680.3	0.0
AG	26,530	206	328	2.5	683.1	683.1	683.1	0.0
AH	26,868	8	53	15.2	691.4	691.4	691.4	0.0
AI	27,254	69	1,084	0.8	701.2	701.2	701.2	0.0
AJ	27,711	249	2,219	0.4	701.2	701.2	701.2	0.0
AK	28,469	243	937	0.9	701.3	701.3	701.3	0.0
AL	30,570	178	348	2.3	709.8	709.8	709.8	0.0
AM	31,228	208	2,080	0.3	726.5	726.5	726.5	0.0
AN	32,402	236	1,876	0.3	726.5	726.5	726.5	0.0
AO	34,038	276	762	0.8	731.6	731.6	731.6	0.0
AP	34,559	173	242	2.5	734.1	734.1	734.1	0.0
AQ	35,420	214	325	1.8	738.8	738.8	738.8	0.0
AR	36,682	123	236	2.5	746.2	746.2	746.2	0.0
AS	39,191	113	114	3.2	760.3	760.3	760.3	0.0

¹Feet above mouth

²Elevation reflects East River backwater elevation

TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BROWN COUNTY, WI
AND INCORPORATED AREAS**

FLOODWAY DATA

WILLOW CREEK

5.0 **INSURANCE APPLICATION**

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent annual chance floodplain, areas within the 0.2 percent annual chance floodplain, and to areas of 1-percent annual chance flooding where average depths are less than 1 foot, areas of 1-percent annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent annual chance flood by levees. No base flood elevations or depths are shown within this zone.

6.0 **FLOOD INSURANCE RATE MAP**

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, for 1-percent annual chance floodplains studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 1-percent and 0.2-percent annual chance floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current FIRM presents flooding information for the entire geographic area of Brown County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each flood-prone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps, where applicable. Historical data relating to the maps prepared for each community, up to and including this countywide FIS, are presented in Table 8, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE(S)	FLOOD INSURANCE RATE MAP EFFECTIVE DATE	FLOOD INSURANCE RATE MAP REVISION DATE(S)
Allouez, Village of	August 18, 2009	None	August 18, 2009	None
Ashwaubenon, Village of	October 27, 1978	None	September 28, 1979	None
Bellevue, Village of	August 18, 2009	None	August 18, 2009	None
Brown County (Unincorporated Areas)	April 17, 1978	None	April 17, 1978	February 19, 1982 November 4, 1992
De Pere, City of	December 28, 1973	June 4, 1976 February 23, 1979	July 2, 1981	None
^{1,2} Denmark, Village of	N/A	None	N/A	None
Green Bay, City of	August 30, 1974	November 7, 1975	September 30, 1977	January 11, 1980 August 14, 1981 June 1, 1984
Hobart, Village of	April 17, 1978	None	April 17, 1978	February 19, 1982 November 4, 1992
Howard, Village of (Dual County Community) (Outagamie County)	December 28, 1973	May 14, 1976	February 17, 1982	None

¹No Special Flood Hazard Areas Identified, ²This community does not have map history prior to the first countywide mapping

TABLE 8	FEDERAL EMERGENCY MANAGEMENT AGENCY	COMMUNITY MAP HISTORY
	BROWN COUNTY, WI AND INCORPORATED AREAS	

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE(S)	FLOOD INSURANCE RATE MAP EFFECTIVE DATE	FLOOD INSURANCE RATE MAP REVISION DATE(S)
The Oneida Nation of Wisconsin (Dual County Community) (Outagamie County)	August 18, 2009	None	August 18, 2009	None
Pulaski, Village of (Multi-County Community) (Oconto County and Shawano County)	May 24, 1974	May 28, 1976	August 3, 1981	None
Suamico, Village of	August 18, 2009	None	August 18, 2009	None
Wrightstown, Village of (Dual County Community) (Outagamie County)	August 22, 1975	None	May 19, 1981	None

TABLE 8	FEDERAL EMERGENCY MANAGEMENT AGENCY BROWN COUNTY, WI AND INCORPORATED AREAS	COMMUNITY MAP HISTORY
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7.0 **OTHER STUDIES**

This FIS report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

8.0 **LOCATION OF DATA**

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region V, 536 South Clark Street, Sixth Floor, Chicago, IL 60605.

9.0 **BIBLIOGRAPHY AND REFERENCES**

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