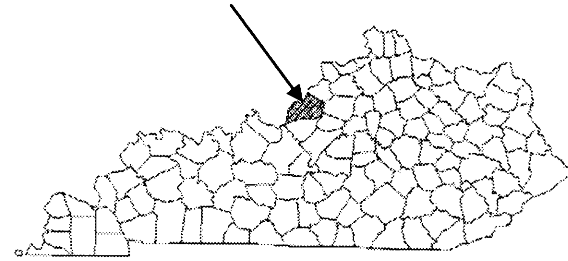
FLOOD INSURANCE STUDY

VOLUME 1 OF 2

METROPOLITAN GOVERNMENT OF
LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS



COMMUNITY NAME	COMMUNITY NUMBER
METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY	210120

REVISED:
DECEMBER 5, 2006

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
21111CV001A

NOTICE TO
FLOOD INSURANCE STUDY USERS

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

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS 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 with community officials and check the Community Map Repository to obtain the most current FIS report 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, cross sections). In addition, former flood hazard zone designations have been changed as follows:

Old Zone(s)	New Zone
A1 through A30	AE
B	X (shaded)
C	X

Countywide FIS Effective Date: December 5, 2006

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FLOOD INSURANCE STUDY

METROPOLITAN GOVERNMENT OF
LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide 2006 Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Jefferson County, Kentucky, including the Cities of Jeffersontown, St. Matthews, Louisville, Shively and West Buechel, and the Unincorporated Areas of Jefferson County (hereinafter referred to collectively as Jefferson County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR. 60.3.

This FIS revises and supersedes the 1994 FIS and Flood Insurance Rate Maps (FIRMs) for Jefferson County (Reference 1). This information will be used by the communities to update existing floodplain regulations as part of the regular phase of the National Flood Insurance Program. The information will also be used by local and regional planners to further promote sound land use and floodplain development.

In January 1987, MSD was legally made the responsible agency for all construction, maintenance, and administration of regulations and restrictions concerning floodplain management in Jefferson County.

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.

The Digital Flood Insurance Rate Map (DFIRM) and FIS Report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the FEMA DFIRM database specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgements

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

For this 2006 FIS revision, the hydrologic and hydraulic analyses for Bee Lick Creek, Big Run Creek, Big Run Ditch, Big Run Diversion, Black Pond Creek, Boxwood Ditch, Buechel Branch, Cane Run Ditch, Cooper Chapel Branch, East Branch Boxwood Ditch, Fern Creek, Filson Fork, Gardens Tributary, Lower Garrison Ditch, Upper Garrison Ditch, Greasy Ditch, Huff Lane Tributary, Little Bee Lick Creek, Lynnview Ditch, Manslick Branch, Mill Creek, Mill Creek Cutoff, Mud Creek, Ohio River, Ponder Creek, Roberson Run, Slate Run, Stephan Ditch, Upper Mill Creek, Valley Creek, and Wet Woods Creek were taken from the 1994 FIS and FIRMs. The analyses were performed by the United States Army Corps of Engineers (USACE) Louisville District for FEMA, under Inter-Agency Agreement No. EMW-86-E-2226, Project Order No. 22. The study was completed in October 1990.

The hydrologic and hydraulic analyses for Brooklawn Tributary and Middle Fork Beargrass Creek were performed by the USACE in December 1976.

The 1-percent-annual-chance flood elevations for Chenoweth Run were taken from the 1994 FIS, which were initially obtained from the FIRM for the City of Jeffersontown, Jefferson County, Kentucky (Reference 2).

The hydrologic and hydraulic analyses for Floyds Fork and Harrods Creek were performed by the USACE, Louisville District, and were initiated under the general authority provided in Section 22 of the Water Resources Development Act of 1974 (PL93-251). This authority provides assistance to states under a cost-sharing agreement of 50% Federal / 50% non-Federal. The non-Federal sponsor for this project was the Louisville / Jefferson County Metropolitan Sewer District (MSD). The Floyds Fork study was completed April 2003. The Harrods Creek study was completed in May 2002.

The hydrologic and hydraulic analyses for the upper reaches of Little Goose Creek and its tributaries were performed by Tetra Tech, Inc. for MSD. The study was completed in October 2002.

The hydrologic and hydraulic analyses for Pennsylvania Run and its tributaries were performed by collaboration between MSD, the University of Louisville (UofL), and a UofL graduate student in 2000.

The hydrologic and hydraulic analyses for Blue Springs Ditch, Brush Run Upper, City Park Ditch, Fishpool Creek, a portion of Goose Creek, Heatherfield Ditch, Hite Creek, Long Run Creek, Northern Ditch, Pond Creek, Southern Ditch, Weicher Creek, a portion of Wet Woods Creek, and Wilson Creek were performed by Fuller, Mossbarger, Scott and May Engineers, Inc. (FMSM) for the Federal Emergency Management Agency (FEMA) and the Louisville / Jefferson County Metropolitan Sewer District (MSD) as part of a Cooperating Technical Partners (CTP) Partnership Agreement dated September 13, 1999. The hydrologic and hydraulic analyses for South Fork Beargrass Creek were performed by Skees Engineering, Inc, for FMSM, for FEMA and MSD as part of the CTP agreement. This work, which was completed in November 2004, covered all significant flooding sources affecting Jefferson County.

The digital base mapping information was provided by Louisville / Jefferson County Information Consortium (LOJIC), 700 West Liberty Street, Louisville, Kentucky 40203-1911. LOJIC represents a multi-agency effort between Louisville – Jefferson County Metro Government, MSD, the Property Valuation Administrator, and the Louisville Water Company. The coordinate system used for the production of this DFIRM is the Kentucky Coordinate System, North Zone (3976), North American Datum of 1983 (NAD83) using the GRS1980 ellipsoid. All elevation data are based on the North American Vertical Datum of 1988 (NAVD88). The DFIRM units are in U.S. Feet. 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 these 2006 DFIRMs.

1.3 Coordination

An initial Consultation Coordination Officer (CCO) meeting was held with representatives from 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 was held with representatives from FEMA, the community, and the study contractor to review the results of the FIS. The dates of the initial and final CCO meetings held for the 1994 FIS are shown in Table 1.

TABLE 1 – CCO Meeting Dates for Prior FIS

Community Name	Initial CCO Date(s)	Final CCO Date
Jefferson County, Kentucky	1985 (initial selection of streams)	
and Incorporated Areas	October, 1989 (study expanded)	April 29, 1992

Community base map selection and the identification of streams requiring detailed study for the 2006 Jefferson County restudy were determined and identified in a Mapping Activity Statement between MSD and FMSM Engineers, Inc., dated September 2003. In January 1987, MSD was legally made the responsible agency for all construction, maintenance, and administration of regulations and restrictions concerning floodplain management in Jefferson County.

The initial selection of streams for the 1994 FIS was completed in 1985, but was limited by funding from FEMA. For this reason, some streams originally studied by detailed methods were to be restudied by approximate methods or not restudied at all. The methodology used by the USACE resulted in the approximate studies being upgraded to limited detail studies. In October 1989, when additional funding became available, more streams were added to the study. Also added at that time was a major floodway variation for the Ohio River, previously approved under FEMA's Limited Map Maintenance Program (LMMP) between the downtown area of the City of Louisville and the upstream limit of Jefferson County. This information was based on FEMA approval of data provided with a September 26, 1988 letter from MSD that resulted in a

Letter of Map Revision dated April 12, 1989. The floodway had not been formally delineated until the 1994 study.

The results of this 2006 Flood Insurance Study were reviewed and accepted at the final CCO meetings held on June 22, 27, 29 and 30, 2005. They were attended by representatives of FEMA, MSD, the Study Contractor and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This 2006 FIS covers the geographic area of Jefferson County, Kentucky, including the incorporated communities listed in Section 1.1 and unincorporated areas.

All or portions of the flooding sources listed in Table 2, "Flooding Sources Studied by Detailed Methods for 1994 FIS," were studied by detailed methods for the 1994 FIS and FIRMs. The floodplains for these flooding sources were redelineated for the 2006 FIS and FIRMs using data from the 1994 FIS and FIRMs. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRMs (Exhibit 2) where applicable.

TABLE 2 – Flooding Sources Studied by Detailed Methods for 1994 FIS

Bee Lick Creek	Greasy Ditch
Big Run Creek	Little Bee Lick Creek
Big Run Ditch	Lynnview Ditch
Big Run Diversion	Manslick Branch
Black Pond Creek	Middle Fork Beargrass Creek
Boxwood Ditch	Mill Creek
Brooklawn Tributary	Mud Creek
Buechel Branch	Ohio River
Cane Run Ditch	Ponder Creek
Cooper Chapel Branch	Roberson Run
East Branch Boxwood Ditch	Slate Run
Fern Creek	Stephan Ditch
Filson Fork	Upper Mill Creek
Lower Garrison Ditch	Valley Creek
Upper Garrison Ditch	Wet Woods Creek

As part of the 2006 FIS, revised or new detailed and limited detailed analyses were included for the flooding sources shown in Table 3. All studies listed are detailed studies unless indicated otherwise. No new approximate studies were completed as part of the 2006 FIS.

TABLE 3 – Limits of 2006 FIS New Detailed and Limited Detailed Studies

Flooding Source	Limits of New Detailed or Limited Detailed Study
Anita Branch	From confluence with Pennsylvania Run to Cedar Creek Road.
Blue Springs Ditch	From confluence with Northern Ditch to the downstream side of Poplar Level Road.
Brownsboro Ditch	From confluence with Little Goose Creek to approximately 100 feet upstream of Ten Broeck Way.
Brush Run Upper	From confluence with Floyds Fork to confluence with Brush Run Upper and unnamed tributary, approximately 1900 feet upstream of Polo Fields Lane.
City Park Ditch	From confluence with Upper Mill Creek to approximately 250 feet upstream of Fust Avenue.
Drews Fork	From confluence with Lovvorn Creek to approximately 300 feet upstream of Cooper Chapel Road.
Durbin Branch	From confluence with Lovvorn Creek to approximately 350 feet upstream of Cooper Chapel Road.
Fishpool Creek	From confluence with Southern Ditch to approximately 300 feet downstream of Cooper Chapel Road.
Floyds Fork	From Jefferson County's southern corporate limits (Bullitt County) to Jefferson County's northeast corporate limits (Oldham County and Shelby County).
Gene Snyder Tributary	From confluence with Pennsylvania Run to approximately 500 feet upstream of Gene Snyder Freeway (I-265) and 100 feet downstream of Pennsylvania Run Road.
Goose Creek	From Lakeland Road to downstream side of Anchor Way.
Harrods Creek	From confluence at Ohio River to Jefferson County's northeast corporate limits (Oldham County).
Heatherfield Ditch	From confluence with Upper Mill Creek to the downstream side of Mary Catherine Drive.
Hite Creek	From Oldham County / Jefferson County line to approximately 1700 feet upstream of Collins Lane.
LeFores Branch	From confluence with Goose Creek to Hazelwood Road.
Little Goose Creek	From approximately 500 feet downstream of I-71 to approximately 300 feet upstream of Westport Road.

Flooding Source	Limits of New Detailed or Limited Detailed Study
Lilac Run	From confluence with Little Goose Creek to approximately 1800 feet downstream of Springhurst Boulevard.
Long Run Creek	Limited Detail Study. From confluence with Floyds Fork to Shelby County / Jefferson County line.
Lovvorn Creek	From confluence with Pennsylvania Run to approximately 200 feet upstream of Beulah Church Road.
Northern Ditch	From confluence with Pond Creek and Southern Ditch to confluence with Fern Creek and unnamed tributary.
Pennsylvania Run	From Jefferson County's southern corporate limits (Bullitt County) to Vaughn Mill Road.
Pohlmann Branch	From confluence with Pennsylvania Run to approximately 300 feet upstream of Beulah Church Road.
Pond Creek	From Bullitt County / Jefferson County line to confluence with Northern Ditch and Southern Ditch.
Rolling Hills Branch	From confluence with Little Goose Creek to approximately 200 feet upstream of Goose Creek Road.
South Fork Beargrass Creek	From pumping station on Beargrass Creek 300 feet downstream of Brownsboro Road to approximately 200 feet downstream of Narwood Drive.
Southern Ditch	From confluence with Pond Creek and Northern Ditch to approximately 600 feet upstream of Michael Ray Drive.
Springhurst Creek	From confluence with Little Goose Creek to approximately 350 feet upstream of Ten Broeck Way.
Weicher Creek	From confluence with Middle Fork Beargrass Creek to approximately 450 feet southwest of Interstate 64 (I-64).
Wet Woods Creek	From confluence with Southern Ditch to downstream side of Interstate 65 (I-65) where it meets the current effective study. (The study represents only the portion of Wet Woods Creek that was realigned.)
Wilson Creek	From confluence with Southern Ditch to Bullitt County / Jefferson County line.

This study will refine and supersede the 1994 FIS in mapping, stream mile determination, drainage area subdivision, and discharges.

TABLE 4, "Stream Name Changes" lists streams that have names in this 2006 FIS other than those used in the 1994 FIS.

TABLE 4 – Stream Name Changes

Old Name	New Name	Location
Big Run Creek	Big Run Ditch	From confluence with Upper Mill Creek to confluence with Big Run Creek and Big Run Diversion.
Big Run Diversion	Big Run Creek	From confluence with Big Run Diversion and Big Run Ditch to upstream limits of channel.
Long Run	Weaver Run	From confluence with Pond Creek to upstream limits of channel.
Lower Mill Creek	Mill Creek	Entire channel, beginning at confluence with Ohio River.
Slop Ditch	Wet Woods Creek	Entire channel, beginning at confluence with Southern Ditch.

This countywide FIS also incorporates the determination of Letters of Map Change (LOMC) issued by FEMA, including Letters of Map Revision (LOMR), Letters of Map Amendments (LOMA), and/or Letters of Map Revision based on fill (LOMR-F). Several hundred LOMCs were incorporated into this 2006 FIS. A table listing all incorporated LOMCs may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community.

2.2 Community Description

The first permanent settlement in the county was started in 1778. This settlement was proclaimed a town in 1780 and named Louisville in honor of King Louis XVI of France. The obstruction to navigation at the "Falls of the Ohio," which necessitated portage activities, was a principle reason for the original settlement. Jefferson County is located in the north central portion of Kentucky. It is bordered on the south by Bullitt County, Kentucky; on the southeast by Spencer County, Kentucky; on the east by Shelby County, Kentucky; on the northeast by Oldham County, Kentucky; on the southwest by Harrison County, Indiana; on the west by Floyd County, Indiana and the City of New Albany, Indiana; and on the northwest by Clark County, Indiana, the City of Jeffersonville, Indiana, and the Towns of Clarksville and Utica, Indiana. It is served by Interstates 64, 65, 71, 264, and 265, and by CSX Railroad, Louisville Indiana Railroad, Norfolk Southern Railroad, and Paducah Louisville Railroad. The April 1, 2000 census population of Jefferson County was reported to be 693,604. The April 1, 2000 population of Louisville was 256,231 (Reference 3).

In January 2003, The City of Louisville and Jefferson County merged to form one government, the Louisville/Jefferson County Metro Government. Louisville/ Jefferson County is the marketing and commerce center for many Kentucky and

Indiana counties. The area is an important manufacturing and industrial center with well-diversified products. Well-developed land, air, and major water transportation facilities exist, including Louisville International Airport.

The Ohio River, which runs from the northern corner of the county to the western portion of the county, has a 203,900 square mile drainage area. It lies between the Allegheny mountains on the east and the Mississippi River on the west and embraces portions of 14 states.

The drainage area of the Ohio River upstream of Louisville / Jefferson County is 91,170 square miles. Drainage of Jefferson County directly into the Ohio River is by Harrods Creek, Goose Creek, Beargrass Creek, Mill Creek and Upper Mill Creek watersheds. Pond Creek, Floyds Fork, Pennsylvania Run, and Cedar Creek are tributaries of the Salt River, located in Bullitt County, which flows into the Ohio River at the southwest extremity of the county.

A large portion of the county lies within the broad floodplain of the Ohio River. However, about 17,600 acres of this floodplain are protected by a flood protection project completed in 1956. An extension of this project downstream near the Bullitt County / Jefferson County limits increased the protected area by 24,100 acres to a total of 41,700 acres.

Records from the National Climatic Data Center for Louisville show an average annual rainfall of 43.95 inches and an average daily temperature of 56.7 degrees Fahrenheit (°F) (Reference 4). These average values are based on a 55-year period from 1948-2003. Extremes for the entire period of record, 1884 – present, are 65.52 inches (2004) and 23.88 inches (1930), maximum and minimum annual precipitation, respectively, and 107°F and -22°F, maximum and minimum daily temperatures, respectively. The maximum 24-hour rainfall of 10.48 inches occurred on March 1, 1997. This topped the previous record of 6.97 inches, set on March 9, 1964 (Reference 5).

The topography of Louisville-Jefferson County is mostly rolling, and the Ohio River floodplain areas have low relief characterized by a deep covering of Pleistocene outwash deposits of alluvium clay, silt, and gravel.

Louisville-Jefferson County is located in the Deciduous Forest Formation of eastern North America. It is contained in the Western Mesophytic forest region. This region has a wide variety of upland forest types and extensive alluvial swamps.

The floodplains of all streams in the county contain both residential and industrial developments, and a great deal of the residential development occurs in the areas in the vicinity of the expressway systems connecting the northeast and southwest portions of the county.

2.3 Principal Flood Problems

In 1937, one of the worst storms of the century hit Louisville, devastating the city and causing major damage. Planning for Louisville and Jefferson County's Flood Protection System began not long afterward. The system was built over a period of 46 years. The first phase of the floodwall, called the Louisville Local Flood Protection Project (LLPP), is about 17 miles in length. The LLPP stretches along the Ohio River from Beargrass Creek to just south of Rubbertown, a major industrial area near the City of Shively. This phase was completed in 1957. A major extension to the first floodwall, called the Southwest Jefferson County Local Flood Protection Project (SJCLPP) began in the late 1960's and was completed in the late 1980's. This branch protected the remainder of southwest Jefferson County, from Rubbertown to near the Jefferson County / Bullitt County boundary. The latest addition is a new pumping station located between Second Street and Interstate 65 in Louisville's downtown Riverfront area. This station was completed in 1994.

Major Ohio River floods of this century occurred in 1937, 1945, 1964, and 1997. The 1937 flood is believed to be the highest since settlement of the area, and it was used in setting heights of the Ohio River local protection projects in the area. That flood reached an elevation of 458.1 feet (NAVD88) at the USGS Ohio River Louisville gage (03294500) and has an expected frequency in excess of once in 500 years. The 1945 and 1964 floods have estimated average recurrence intervals of once in 70 years and 45 years, respectively.

Twenty USGS peak-flow gages exist in Jefferson County, including the gage on the Ohio River (Reference 6). The gages are listed in Table 5.

TABLE 5 - USGS Gages in Jefferson County

Watershed	Gage Number	Gage Name
Floyds Fork	03298242	Cedar Creek at Fairmount Road near Mount Washington
	03298250	Cedar Creek at Thixton
	03298150	Chenoweth Run at Gelhaus Lane near Fern Creek
	03298135	Chenoweth Run at Ruckriegel Parkway
	03301900	Fern Creek at Old Bardstown Road
	03298000	Floyds Fork at Fisherville, KY
	03297970	Long Run near Eastwood, KY
	03298300	Pennsylvania Run at Mt. Washington Road
Goose Creek	03292474	Goose Creek at Old Westport Road near St. Matthews
	03292475	Goose Creek at US Hwy 42 near Glenview Acres, KY
	03292480	Little Goose Creek near Harrods Creek
Ohio River	03294500	Ohio River at Louisville, KY (lower pool)
	03293548	Ohio River at Louisville, KY (upper pool)
Pond Creek	03301940	Northern Ditch at Okolona, KY

Watershed	Gage Number	Gage Name
	03302030	Pond Creek at Pendleton Road
	03302000	Pond Creek near Louisville, KY
South Fork Beargrass Creek	03293000	Middle Fork Beargrass Creek at Old Cannons Lane
	03292785	Middle Fork Beargrass Creek at St. Matthews
	03292550	South Fork Beargrass Creek at Winter Avenue
	03292500	South Fork Beargrass Creek at Louisville, KY
Upper Mill Creek	03294550	Mill Creek Cutoff

The Beargrass Creek watershed streams originate in eastern Jefferson County and flow into and through the eastern sector of the Louisville Metro to their confluences with the Ohio River. Flooding within the Louisville Metro is concentrated upstream of the Ohio River Flood Protection System, where inadequate bridge openings cause major flooding during headwater floods. Flooding from Beargrass Creek watershed streams is confined to the upper reaches of the watershed and is caused by local intense rainstorms. Major Beargrass Creek watershed floods have occurred in 1937, 1960, 1964, 1970, 1973 and 1997.

Estimated natural frequencies on the Beargrass Creek Watershed floods are shown below. A Log-Pearson Type I distribution was applied to obtain the yearly return intervals.

Estimated Frequencies

Flood (Year)	South Fork	Middle Fork
March 1964	30 years	20 years
April 1970	20 years	30 years
March 1997	60 years	60 years

To offset the increasing urbanization runoff effects from similar floods, a dry-bed reservoir was completed in the upper reach of South Fork Beargrass Creek in late 1980. This reservoir, which controls 2.57 square miles, reduces the impact of flooding down to Hikes Lane. Below Hikes Lane to the USGS stream gage located at Trevilian Way, the dry-bed reservoir compensates for increases of intense development in the watershed in the last few decades, so that the net result in flood levels is about the same as in the mid-1970's.

The Mill Creek watershed is located in the City of Shively and southwestern Jefferson County, bounded by the Ohio River to the west and the hills of Iroquois Park to the east. It is divided into two subbasins, Upper Mill Creek and Mill Creek. Upper Mill Creek flows partially through the City of Shively and is upstream of the existing Ohio River LLPP. Consequently, flooding on Upper Mill Creek is of the headwater variety caused by locally intense rainstorms. The March 1964 flood caused extensive flooding in the City of Shively. Big Run Ditch, a tributary of Upper Mill Creek outside the obsolete local protection levee, has not experienced major damage from flooding. However, the headwater area has rapidly developed in the flat floodplain area, thus increasing the potential for future flood damage. Mill Creek flows through the Pleasure Ridge Park and Valley Station areas of southwestern Jefferson County. This area was outside the existing local protection project, and Ohio River flooding was present, but now this area is protected except for headwater flooding and areas downstream, many of which were purchased in fee or easement by the county for interior ponding purposes.

The Pond Creek watershed is located in southern Jefferson County. Historically, the Pond Creek area was a rural wetland. In the 1920's, Pond Creek was widened and deepened, and two major tributaries, Northern Ditch and Southern Ditch, were constructed to drain the wetland for farming. After World War II, uncontrolled industrial, commercial and residential developments began to quickly replace the farmland. Flooding in Pond Creek today is caused by headwater flooding or Ohio River stages resulting in use of ponding easement areas purchased by the county to provide for a 1-percent-annual-chance level of interior ponding. The channels of Northern and Southern Ditches were enlarged to an approximate 15-year flood flow capacity in the late 1950's and early 1960's to reduce flooding in the rapidly developing industrial area. However, these tributaries are susceptible to flooding because of restrictions in the channel and floodplain of Pond Creek. Major flooding in the watershed occurred in 1937, 1964 and 1997, with 1964 being the largest headwater flood on record. In 1998, MSD, Jefferson County Government, USACE, U.S. Representative Anne Northup, and area neighborhood groups initiated the Pond Creek Flood Prevention Project. The project will utilize large basins for flood storage and channel improvements to remove an estimated 2,000 buildings from the danger of most floods.

Floyds Fork flows through southeastern Jefferson County. The area through which Floyds Fork flows, previously a predominantly rural area, has become an area of subdivision development and some industrial development. The area includes the Town of Fisherville and the City of Jeffersontown. The watershed is hilly and has wide valleys in its upper reaches. Major flooding in the watershed is the result of local intense rainstorms. Major floods occurred in March 1964, April 1970, and March 1997.

2.4 Flood Protection Measures

Before construction of the SJCLPP, the LLPP consisted of levees, floodwalls, pumping plants, and other necessary appurtenances which helped protect the Cities of Louisville and Shively, and some of the unincorporated areas of Jefferson County. The degree of protection was equal to the 1937 flood, with 3 feet of freeboard. Considering the present system of Ohio River watershed upstream flood control lakes, this level of protection is greater than a 0.2-percent-annual-chance frequency. No floodwall was constructed in the vicinity of the George Rogers Clark Memorial Bridge because the line of protection is along Main Street, above the minimum protection grade. However, a two-block area upstream of the Clark Bridge and riverward of Main Street comprising the Presbyterian National Headquarters will be protected by walls, levees, and a pumping station to an elevation equal to the 1-percent-annual-chance flood profile plus approximately 3 feet. Therefore, this area is shown to be outside the 1-percent-annual-chance floodplain.

On Mill Creek Cutoff, below Wilkie Road, a barrier dam with a pumping plant exists. This barrier dam was part of the LLPP and provided protection against the Ohio River backwater flooding. Local metropolitan agencies improved the channel and replaced several bridges on Upper Mill Creek to help mitigate headwater flooding. Tributaries of Upper Mill Creek were also enlarged to prevent flooding. Mill Creek tributaries were enlarged to improve storm drainage, although the Mill Creek area was still subject to Ohio River backwater flooding.

The lower part of the Pond Creek watershed was subject to Ohio River backwater. Pond Creek was enlarged in the early 1960's from Manslick Road, downstream to CSX Railroad. Northern Ditch, up to Old Shepherdsville Road, and Southern Ditch, up to Outer Loop, were also enlarged at that time. Several detention basins exist throughout the Pond Creek watershed, which are listed below.

Pond Creek Watershed Detention Basins

Name	Location
* Confluence Basin	Confluence of Northern Ditch and Southern Ditch with Pond Creek
Melco Basin	Adjacent to Northern Ditch, upstream of Grade Lane
PTRL Basin #1	Confluence of Fishpool Creek with Southern Ditch
PTRL Basin #2	Adjacent to Wilson Creek, between Fairdale Road and I-265
* PTRL Basin #3	Southwest corner of Ruben Lane and National Turnpike
Roberson Run Basin	Downstream of Shepherdsville Road on Roberson Run, a tributary of Southern Ditch
Vulcan	Adjacent to Fishpool Creek, downstream of I-265

* Under construction

The SJCLPP, which began in 1973, consisted of levees, floodwalls, pumping plants, and other necessary appurtenances. This project connects with the LLPP in the vicinity of Mill Creek Cutoff and follows the Ohio River to just south of Kosmosdale, where the project crosses Pond Creek to higher ground. This project was built to provide the same degree of protection at the LLPP.

Three pumping plants with large ponding areas have been provided for relief from interior flooding. They are located on Pond Creek (mile 1.52), Mill Creek (mile 0.34), and Mill Creek Cutoff (mile 0.15). However, the levee and floodwall in this area will provide some degree of flood protection to the community. In the design of pumping plant capacities, provisions were made to purchase, in fee or by easement, that land required for containment of a 1-percent-annual-chance interior flood coincident with flood periods on the Ohio River.

The 1-percent-annual-chance ponding levels are elevations 440.5 feet (Pond Creek), 429.0 (Mill Creek), and 435.0 (Mill Creek Cutoff) (NAVD88). Although these streams and some of their lower tributaries are no longer affected by Ohio River backwater, ponding required by these pumping plants and floodwalls will cause backwater to these elevations.

Beargrass Creek is protected from Ohio River backwater flooding by a barrier dam, located at mile 0.76, equipped with a pumping plant, which is a part of the LLPP. On South Fork Beargrass Creek, a concrete channel has been in place for decades from just below Main Street to about 400 feet upstream of Eastern Parkway. However, the lower half of this reach is still subject to flooding because the design frequency of the pumping plant is 30 years and bridge openings along the improved channel were not enlarged. The stretch of South Fork from upstream of Eastern Parkway to Trevilian Way was enlarged in the early 1950's. Also, channel improvements and bridge additions were made in the reach between Bashford Manor Lane and Bardstown Road in the late 1960's and late 1980's, respectively.

No flood protection measures are in effect in the Floyds Fork watershed.

In the early 1970's, Jefferson County implemented a stormwater management program. This program is designed to preclude any increase in peak discharge from storm runoff because of development of a site for storms in the 50-percent to 1-percent-annual-chance frequency range. The program, now under MSD, requires either onsite detention basins or financial contributions to construction and maintenance of regional detention basins. An alternative to this is equal replacement for lost floodplain storage.

All of these measures were taken into consideration for this study.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood-hazard data required for this study. 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) were 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 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 community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each riverine flooding source studied in detail. This section is a compilation of previously published hydrologic information from the 1994 FIS, as well as new detailed hydrologic analyses for riverine flooding sources affecting the community.

Only streams that are being redelineated for the 2006 FIS using 1994 FIS data are mentioned in the "1994 FIS Analyses" section. All hydrologic data for new or revised detailed studies are located in the "New and/or Revised Analyses for 2006 FIS" section.

1994 FIS ANALYSES

Discharges for the entire length of the Ohio River were obtained from the 1994 FIS, which were based on an analysis conducted by the Ohio River Division of the USACE in Cincinnati, Ohio. The methodology used for the development of the discharges for the Ohio River is different from the methodology used for all other remaining streams in Jefferson County.

Natural discharge-frequency curves on the Ohio River were developed in accordance with methods presented in the USACE hydrology report (Reference 7). Modified discharge-frequency curves on the Ohio River resulted from routing 12 representative floods for the Ohio River modified by an upstream reservoir system. That system included reservoirs completed or near completion in 1976, considered current in 1990. Data were plotted opposite original flood data on a grid containing a referenced flow reduction of natural flow and a new best-fit curve was drawn. Total reductions were read from the new curve at selected natural flow frequencies, and subtracted from natural flows at those frequencies to obtain revised modified-flow values.

The drainage area for the Ohio River at the USGS gage (Gage 03294500) located near the center of the reach bordering Jefferson County is 91,170 square miles. There are only minor differences at the upstream and downstream extremities of the county. Ohio River historical records at this USGS gage date from 1832 to the present.

The discharge for the Ohio River is constant for the total reach bordering Jefferson County.

The hydrologic analyses for the redelineated streams were obtained from the 1994 FIS, and remain unchanged for the 2006 FIS. The discharges in the Mill

Creek, Pond Creek, South Fork Beargrass Creek, and Upper Mill Creek watersheds were determined using the USACE HEC-1 Flood Hydrograph Package computer program (Reference 8). The USACE reviewed the basin models, developed for MSD under contract, that contained a number of subbasins to define the flow regime. SCS Curve Numbers (CNs) based on drainage characteristics of soil group and land use, drainage area, time of concentration, and rainfall excess were used to compute flows for each subbasin. After initial review, adjustments to both the subbasin delineations and basin characteristics were required for each of the major basins. Discharge values for the 1-percent-annual-chance flood initially determined from the USACE HEC-1 model were used in the development of stream profiles from the USACE HEC-2 computer model computations (Reference 9). The plotting of the 1-percent-annual-chance floodplain showed bridges that had restrictive openings, which cause major ponding areas, and streams with large natural valley storage. Capacities of the ponding areas were determined, and storage routings were added to the HEC-1 model to recalculate discharges. Since each major basin had its own special characteristics, numerous trials were required before final discharge values were adopted for the 1-percent-annual-chance flood. Interviews with property owners and records from MSD's flooding complaint files provided verification of the 1-percent-annual-chance floodplain areas delineated using the final discharge values.

The following information for each major watershed has been provided to show critical findings and decisions which resulted in the peak discharge-drainage area relationships for the 1-percent-annual-chance flood of each flooding source studied in detail in the community.

BEARGRASS CREEK WATERSHED

The hydrologic analyses for the redelineated streams in the Beargrass Creek Watershed were calculated using HEC-1, and were verified using two methods. High water marks were available on both South Fork and Middle Fork Beargrass Creek for five floods; March 1964, April 1970, July 1973, May 1983, and February 1990. Discharge-frequency curves were used for the two Beargrass Creek USGS gages that existed at the time the study was performed. The discharges calculated using these methods include Brooklawn Tributary, Buechel Branch and Middle Fork Beargrass Creek.

FLOYDS FORK WATERSHED

The hydrologic analyses for the redelineated streams in the Floyds Fork Watershed were calculated using flood flow-frequency computations based on records from USGS gage 03298000 on Floyds Fork at Fisherville. High water marks from the May 1961 and March 1964 floods were used to plot profiles of the heights attained during the storms.

MILL CREEK WATERSHED

This watershed was divided into 16 subbasins. Restrictive bridge openings required storage routings at four locations in the watershed. They were for Stephan Drive and Dorrance Drive on Stephan Ditch, Stonestreet Road on Ponder Creek, and Moorman Road on Mill Creek. The hydrologic analyses were calculated using HEC-1 and were verified by comparing the results to discharge data used in the design analysis for the SJCLPP and to discharges obtained in the original Flood Insurance Study for Jefferson County (Reference 10). No USGS gages are located in the Mill Creek watershed.

The county obtained land to provide for a 1-percent-annual-chance level of ponding and to preserve valley storage below that level in conjunction with a pumping station at mile 0.34 of Mill Creek. It was determined backwater effects from ponding control the 1-percent-annual-chance Mill Creek profile to Moorman Road. Also, there are backwater effects on the lower portions of Valley Creek and Black Pond Creek from the pumping plant on Mill Creek. The discharges calculated using these methods include Black Pond Creek, Mill Creek, Ponder Creek, Stephan Ditch, and Valley Creek.

POND CREEK WATERSHED

The hydrologic analyses for the redelineated streams in Pond Creek were calculated using HEC-1, and were verified using two methods; high water marks from the 1964 flood and log-Pearson Type III methodology. The discharges calculated using these methods include Bee Lick Creek, Cooper Chapel Branch, Fern Creek, Filson Fork, Greasy Ditch, Little Bee Lick Creek, Manslick Branch, Mud Creek, Roberson Run, Slate Run and Wet Woods Creek (upstream of I-65 only).

UPPER MILL CREEK WATERSHED

This watershed was divided into 20 subbasins. Restrictive bridge openings required storage routings at six locations in the watershed. They included Lynnview Ditch at Dover Road and South Crums Lane, Upper Mill Creek at the old levee and pump station, and Big Run Creek at the Illinois Central Railroad Bridge. The hydrologic analyses for the redelineated streams in the Upper Mill Creek were calculated using HEC-1, and like Mill Creek Watershed, were verified by comparing the results to discharge data used in the design analysis for the SJCLPP and to discharges obtained in the original Flood Insurance Study for Jefferson County. At the time the study was performed, no USGS gages existed in the watershed. The county obtained land easements for a 1-percent-annual-chance level of ponding and to preserve valley storage below that level in conjunction with a pumping station at mile 0.15 of Mill Creek Cutoff. Besides the lower portion of the Mill Creek Cutoff and Upper Mill Creek, the backwater from this ponding affects Huff Lane Tributary, Gardens Tributary, and Lower Garrison Ditch. The discharges calculated using these methods include Big Run Creek, Big Run Ditch, Big Run Diversion, Boxwood Ditch, Cane Run Ditch, East Branch Boxwood Ditch, Lower Garrison Ditch, Upper Garrison Ditch, Lynnview Ditch, Mill Creek Cutoff, and Upper Mill Creek.

NEW AND/OR REVISED ANALYSES FOR 2006 FIS

The following information for each major watershed has been provided to show new critical findings and decisions which resulted in the peak discharge-drainage area relationships of each flooding source studied in detail in the community.

BEARGRASS CREEK WATERSHED

New hydrologic analyses were performed for South Fork Beargrass Creek and Weicher Creek within the Beargrass Creek Watershed.

South Fork Beargrass Creek

New detailed hydrologic analyses were performed for South Fork Beargrass Creek from its headwaters in eastern Jefferson County to the flood pumping station 300 feet downstream of Brownsboro Road at stream mile 0.76.

There are two USGS stream gages (Trevilian Way and Winter Avenue) in the South Fork watershed and one (Old Cannons Lane) in the Middle Fork basin.

Hydrologic analyses were performed to establish peak discharge-frequency relationships for the South and Middle Forks of Beargrass Creek. TR-55 methodology was used to determine the appropriate CN and lag time for each subbasin. Reach routing was modeled using either the Muskingum or Modified Puls methods, as warranted. The calculations and calibrations were performed with HEC-HMS (Version 2.2.2). Additionally, a routing model was developed through the Dry Bed Reservoir. The hydrologic model was calibrated using observed flows at the Old Cannons Lane and Trevilian Way stream gages for the March 1997 and January 2000 events.

The HEC-HMS models for the Beargrass Creek basin were developed using GIS applications to estimate the parameters necessary for input to the model. These applications utilized ESRI's ArcGIS product and data from the Louisville / Jefferson County Information Consortium (LOJIC) Geographic Information System.

The watershed above the Brownsboro Road flood pumping station was delineated into several subbasins. The subbasins were used in conjunction with the TR-55 methodology to develop parameters for input to the HEC-HMS model. Impervious surface area was calculated using selected layers (i.e. buildings, roads, parking lots) of LOJIC GIS data. A digital version of the Jefferson County Soils Survey was used to classify the pervious area by hydrologic soil group. An area-weighted CN was then calculated for each subbasin. For the urban area, where no detailed soils data exists, each subbasin was assumed to have the same ratio of hydrologic soil groups as those subbasins upstream.

The time of concentration for each subbasin was determined using Manning's equation relationships and standard TR-55 methodology. The longest flow path for each subbasin was determined and different flow regimes were assigned to segments of these flow paths. The regimes consisted of overland sheet flow, shallow concentrated flow, and main channel flow. The lag time for each subbasin is 60% of the calculated time of concentration.

Substantial portions of the South and Middle Fork watersheds are served by a combined sewer system. During low flow conditions, most of the flow is transported to the treatment plant via "interceptor" lines. Once the flow is great enough to exceed the design capacity of the sanitary portion of the combined sewer, part of the water will be diverted into the stream via a Combined Sewer Overflow (CSO). The MSD Watershed Master Plan investigated the interaction of the combined sewer with South Fork Beargrass Creek. A SWMM model for this area was used to create outflow hydrographs for a 10-year, 1-hour, SCS Type-II rainfall event. These hydrographs were input into an HEC-1 model at the locations where the SWMM model subbasins and the HEC-1 subbasins coincided. The hydrographs were then summed and routed through the different subbasins to the mouth of South Fork. A comparison between this HEC-1 with SWMM model versus an HEC-1 model with overland flow was performed. The flows were approximately the same at various discharge points. It was concluded that the HEC-1 model would provide accurate enough results, and that any additional effort to incorporate the SWMM model, which requires a substantial amount of detailed information, was not warranted.

Existing HEC-1 models developed within the study area were used to aid in identifying storage locations. These models described constrictions along Middle Fork at I-264 and I-64, which create a backwater condition. Additionally, storage upstream of a railroad culvert in Buechel Park was included from these prior HEC-1 models in the HEC-HMS models. The previously delineated sub-basins were divided as needed to accommodate the insertion of these storage locations.

Two rainfall events were chosen to calibrate the HEC-HMS model for the current study: February / March 1997 and January 2000.

Weicher Creek

New detailed hydrologic analyses were performed for Weicher Creek. The detailed study for Weicher Creek encompasses the main reach (approximately 3.1 miles), which begins west of Hurstbourne Parkway and Interstate 64 and flows westward to its confluence with South Fork Beargrass Creek just west of Interstate 264. Several small ponds, privately maintained by the Oxmoor Golf and Country Club, are located in the upper portion of the study area.

Weicher Creek drains west into South Fork Beargrass Creek, which in turns drains north into Middle Fork Beargrass Creek and into the Ohio River. The total drainage area for Weicher Creek, at the downstream study outlet, is 1.90 square miles. The upper (eastern) portion of the watershed is predominantly grassland or open space land use (i.e. golf courses, etc.) while the central and lower portions are primarily residential and commercial. Soils within the watershed are mainly silt loams with a predominant USGS hydrologic soil group classification of C. Several moderately sized ponds were included in the detailed study, near the east-central portion of the watershed (Oxmoor Golf and Country Club). The central and western portions of the watershed contain floodplains occupied with residential structures causing obstructions and encroachments upon the stream, which has been channelized in this area. In addition, several bridges and culverts located along the lower portions of Weicher Creek affect the flood profiles for this stream.

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for the study streams. Standard hydrologic methods were used to determine the discharge rates. These flooding events have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any given year. Additionally, the peak discharge for the 1-percent-annual-chance return interval considering fully developed watershed conditions was determined for each stream. In modeling these return interval flood discharges, the corresponding design storm events from MSD were utilized. Due to a lack of existing gage data on or in close proximity to Weicher Creek, model discharge output was verified by comparing it against the peak discharges determined from regression equations for Jefferson County.

To predict flow values associated with particular 24 hour storms, detailed hydrologic models were developed for the study watersheds using the U.S. Army Corps of Engineers' HEC-HMS software (Version 2.2.2). The HEC-HMS models were then run with the 10-, 2-, 1- and 0.2-percent chance events using a standard SCS Type II 24 hour design storm distribution. Rainfall depth values were based on precipitation depth values from the document, "Rainfall Frequency Atlas of the United States, Technical Paper 40 (TP-40) (Reference 11). Although precipitation depth values for the 0.2-percent-annual-chance event are not available in TP-40, the 0.2-percent-annual-chance value was extrapolated from a logarithmic graph of the published precipitation values for higher frequency event. As accurate calibration data does not exist for Weicher Creek the model discharges were verified by comparison of discharges based upon regression equations for rural and urban streams in Jefferson County presented in "Estimation of Peak-Discharge Frequency of Urban Streams in Jefferson County, Kentucky, U.S. Geological Survey, Water-Resources Investigations Report 97-4219" (Reference 14).

The hydrologic physical parameters, including storage areas and CNs for the hydrologic models were obtained using GIS applications contained in ESRI's ArcView software package. Datasets used in the watershed models were obtained from public sources or created specifically for the modeling process. Watershed delineation was performed by field reconnaissance and digitizing watersheds using digital topographic information along with aerial orthophotography supplied by the Louisville and Jefferson County Information Consortium (LOJIC). Once the watershed boundaries were determined, the FIS study sub-areas were further subdivided into smaller units based upon storm water structures/network, significant storage areas, and outfall distribution in each watershed.

Soil Conservation Service (SCS) CN methodology was used to simulate the infiltration and runoff relationships among the urban development in the subbasins. The SCS CN classification is based upon land use and hydrologic soil groups. Digitized datasets describing generalized land use were obtained from LOJIC covering each of the detailed study watersheds. Using the land use and soils datasets, existing and fully developed composite CNs were developed for each subbasin. These composite CNs were derived from CNs associated with each unique combination of land use and hydrologic soil group. The CNs were based on standard SCS convention and methodology.

The time of concentration for each subbasin was determined using Manning's equation relationships and standard TR-55 methodology. The longest flow path for each subbasin was determined and different flow regimes were assigned to segments of these flow paths.

To simulate the hydrograph generation and transformation, SCS Unit Hydrograph methodology was used. Stream base-flow was not included in the original FIS models; therefore they are not included in this DFIRM detailed study.

In the Weicher Creek model, the hydrograph attenuations are simulated by both reservoir storage-discharge routing behind specific road crossings (bridges, culverts) and by the Muskingum-Cunge 8-point Cross Section method for the longer main stream reaches. The channel length and slope for the Muskingham-Cunge method were determined from the GIS data and the cross section geometry was based upon field reconnaissance observations and GIS data for the channels in specific locations.

FLOYDS FORK WATERSHED

New hydrologic analyses were performed for the following streams in the Floyds Fork Watershed: Brush Run Upper, Floyds Fork and Long Run Creek. New hydrologic analyses were also performed for the Pennsylvania Run Watershed, which is a subbasin of the Floyds Fork Watershed, for the following streams: Anita Branch, Drews Fork, Durbin Branch, Gene Snyder Tributary, Lovvorn Creek, Pennsylvania Run, and Pohlmann Branch.

Brush Run Upper

New detailed hydrologic analyses were performed for Brush Run Upper. The study area encompasses the main reach and several tributaries. The main reach (approximately 4.0 miles) begins near the Oldham County – Jefferson County boundary flowing southwest to its confluence with Floyd's Fork just north of Shelbyville Road (U.S. Route 60). Polo Fields Lake, a privately maintained facility, is located in the upper portion of the study area.

The total drainage area for Brush Run Upper, at the downstream study outlet, is 3.60 square miles. The central and southwestern portion of the watershed is primarily grasslands and predominantly pervious/open space development (i.e. golf courses, etc.). The remainder of the watershed is a mixture of residential and light commercial land use. Soils within the watershed are mainly silt loams with a U.S. Geological Survey (USGS) hydrologic soil group classification of C. Polo Fields Lake is an impoundment on Brush Run Upper that is located in the upper portion of the watershed. The impoundment has principal and emergency spillways which discharge back into Brush Run Upper. Residential and commercial development within the floodplains has not occurred to a large extent in the watershed. Several structures (railroad and highway bridges) located along the downstream portion of Brush Run Upper directly affect the flood profiles for the streams.

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for the study streams. Standard hydrologic methods were used to determine the discharge rates. These flooding events have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any given year. Additionally, the peak discharge for the 1-percent-annual-chance return interval considering fully developed watershed conditions was determined for each stream. In modeling these return interval flood discharges, the corresponding design storm events from MSD were utilized . Due to a lack of existing gage data on or in close proximity to Brush Run, model discharge output was verified by comparing it against the peak discharges determined from regression equations for Jefferson County.

To predict flow values associated with particular 24 hour storms, detailed hydrologic models were developed for the study watersheds using the U.S. Army Corps of Engineers' HEC-HMS software (Version 2.2.2). The HEC-HMS models were then run with the 10-, 2-, 1-, and 0.2-percent-annual-chance events using a standard SCS Type II 24 hour design storm distribution. Rainfall depth values were based on precipitation depth values from TP-40 (Reference 11). Although precipitation depth values for the 0.2-percent-annual chance event are not available in TP-40, the 0.2-percent-annual-chance value was extrapolated from a logarithmic graph of the published precipitation values for higher frequency events. As accurate calibration data does not exist for Brush Run Upper, the discharges were verified by comparison of discharges based upon regression equations for rural and urban streams in Jefferson County presented in "Estimation of Peak-Discharge Frequency of Urban Streams in Jefferson County, Kentucky, U.S. Geological Survey, Water-Resources Investigations Report 97-4219" (Reference 14).

The hydrologic physical parameters, including storage areas and CNs for the hydrologic models were obtained using GIS applications contained in ESRI's ArcView software package. Datasets used in the watershed models were obtained from public sources or created specifically for the modeling process. Watershed delineation was performed by field reconnaissance and digitizing watersheds using digital topographic information along with aerial orthophotography supplied by the Louisville and Jefferson County Information Consortium (LOJIC). Once the watershed boundaries were determined, the FIS study sub-areas were further subdivided into smaller units based upon storm water structures/network, significant storage areas, and outfall distribution in each watershed.

Soil Conservation Service (SCS) CN methodology was used to simulate the infiltration and runoff relationships among the urban development in the subbasins. The SCS CN classification is based upon land use and hydrologic soil groups. Digitized datasets describing generalized land use were obtained from LOJIC covering each of the detailed study watersheds. Using the land use and soils datasets, existing and fully developed composite CNs were developed for each subbasin. These composite CNs were derived from CNs associated with each unique combination of land use and hydrologic soil group. The CNs were based on standard SCS convention and methodology.

The time of concentration for each subbasin was determined using Manning's equation relationships and standard TR-55 methodology. The longest flow path for each subbasin was determined and different flow regimes were assigned to segments of these flow paths.

To simulate the hydrograph generation and transformation, SCS Unit Hydrograph methodology was used. Stream base-flow was not included in the original FIS models; therefore they are not included in this DFIRM detailed study.

For the Brush Run Upper model, the hydrograph attenuations are simulated by both reservoir storage-discharge routing behind specific road crossings (bridges, culverts) and by the Muskingum-Cunge 8-point Cross Section method for the longer main stream reaches. The channel length and slope for the Muskingham-Cunge method were determined from the GIS data and the cross section geometry was based upon field reconnaissance observations and GIS data for the channels in specific locations.

Floyds Fork

New detailed hydrologic analyses were performed for the entire extent of Floyds Fork by USACE for existing conditions. The watershed was subdivided into 86 subbasins. The 86 subbasins for the study and their designations originated from the USGS. The areas range from 0.13 – 10.01 square miles. The hydrologic soil groups in the area are generally a combination of B and C with the majority in group C. Composite SCS CNs were developed for each subbasin. The values for the CNs ranged from the low 70's to the high 80's. The LOJIC database was used to retrieve land use and soil types. Times of concentration were computed using the Technical Release 55 method (TR-55), where the time of concentration is found by determining the hydraulically longest path for a drop of water to reach the outfall location by routing it through 3 components: sheet flow, shallow concentrated flow, and channel or pipe flow (Reference 12). Discharges were determined using USACE's HEC-HMS computer software (Reference 13). The model was calibrated using data obtained from the March 1997 flood.

CNs representing fully developed conditions of the Floyds Fork watershed were developed later by FMSM Engineers, Inc. Hydrologic soil groups and the Jefferson County zoning layer were used to establish these values.

Long Run Creek

Limited detail hydrologic analyses were performed for Long Run Creek. The analyses included all of Long Run Creek, from the confluence with Floyds Fork up to the Jefferson County / Shelby County border. A HEC-HMS model of the stream was developed, and the watershed was subdivided into 16 subbasins. Times of concentration were developed using TR-55. SCS CNs were developed using land use and hydrologic soil group information. The model was calibrated using two methods: USGS regression equations for Jefferson County (Reference 14) and analyzing local gage data utilizing USGS's PEAKFQ software (Reference 15). The PEAKFQ software uses procedures outlined in the report, "Interagency Advisory Committee on Water Data, 1982, Guidelines for Determining Flood Flow Frequency: Bulletin 17B" to determine the exceedance probability of storm events.

Pennsylvania Run Watershed

New detailed hydrologic analyses were performed for the entire Pennsylvania Run watershed, which is a subbasin of the Floyds Fork watershed, for existing conditions. The analyses included Pennsylvania Run, Lovvorn Creek, and their tributaries. A HEC-HMS model was developed, and the watershed was subdivided into 36 subbasins. The areas range from 0.004 – 0.608 square miles. Several storage routings were added to the model, including McNeely Lake, which is located on the main branch of Pennsylvania Run. SCS CNs based on drainage characteristics of soil group and land use, drainage area, time of concentration, and rainfall excess were used to compute flows for each subbasin.

CNs representing fully developed conditions of the Pennsylvania Run watershed were developed later by FMSM Engineers, Inc. Hydrologic soil groups and the Jefferson County zoning layer were used to establish these values.

GOOSE CREEK WATERSHED

Within the Goose Creek Watershed, new hydrologic analyses were performed for portions of Goose Creek and for portions of Little Goose Creek and four tributaries.

Goose Creek

New detailed hydrologic analyses were performed for the uppermost portion of Goose Creek and a tributary, LeFores Branch, ending upstream of Lakeland Road. The study area is approximately 1.9 square miles and was sub-divided into 11 subbasins. Two sets of SCS CNs were developed; one for existing conditions, which were based on soil type and land use data, and the other for fully developed conditions, which were based on soil type and zoning data. Other modeling parameters included watershed drainage areas and times of concentration, which were calculated using TR-55. A SCS Type II, 24-hour rainfall distribution was used for the analysis. Discharges were determined using USACE's HEC-HMS computer software.

Little Goose Creek

New detailed hydrologic analyses were also performed for Little Goose Creek and four tributaries, Brownsboro Ditch, Lilac Run, Rolling Hills Branch, and Springhurst Creek. The study was performed by Tetra Tech, Inc. for MSD. A SCS Type II, 24-hour rainfall distribution was used, with rainfall depths obtained from TP-40 (Reference 11). The Little Goose Creek watershed upstream of I-71 is approximately 4.3 square miles and was subdivided into 33 subbasins. The subbasins were delineated based on LOJIC data, field reconnaissance, and design plans. Four sets of SCS CNs were developed, two of which were utilized for the study. One set was developed for existing conditions, which were based on soil type and land use data, and the other set was for fully developed conditions, which were based on soil type and zoning data. Times of concentration were developed using the TR-55 method. The runoff was then routed using the SCS Curvilinear Unit Hydrograph method. Discharges were then obtained by running channel and pond routings using HEC-HMS.

HARRODS CREEK WATERSHED

New hydrologic analyses were performed for Harrods Creek and Hite Creek within the Harrods Creek Watershed.

Harrods Creek

New detailed hydrologic analyses were performed by USACE for Harrods Creek for existing conditions. Initially the upper part of the basin, having a drainage area of 72.2 square miles above the tributary South Fork of Harrods Creek was divided into 36 subbasins. Almost every subbasin is a combination of B and C Hydrologic Soil Group with the majority being the C group. Composite SCS Runoff CNs were developed for each subbasin. These numbers are in the middle 70's to low 80's range. Average watershed slope and hydraulic length in feet were determined to compute the times of concentration and SCS lag time. A model was then developed using HEC-HMS.

CNs representing fully developed conditions of the Harrods Creek watershed were developed later by FMSM Engineers, Inc. Hydrologic soil groups and the Jefferson County zoning layer were used to establish these values.

It is to be noted that backwater from the Ohio River controls for the entire length of Harrods Creek that is located in Jefferson County.

Hite Creek

New detailed hydrologic analyses were performed for Hite Creek. The Hite Creek study includes the main reach (approximately 5.0 miles) and several small tributaries. The main study reach begins near La Grange Road just north of Interstate 265 and flows northwest to its confluence with South Fork Harrods Creek, north of Interstate 71 in Oldham County, Kentucky. Several small privately maintained ponds and basins are located in the study area.

Hite Creek drains northwest into Harrods Creek, which drains directly into the Ohio River. The total drainage area for Hite Creek, at the downstream study outlet, is 4.94 square miles. The upper (southeastern) portion of the watershed is a combination of commercial and industrial land use while the central and lower portions are primarily residential. Soils within the watershed are mainly silt loams with a USGS hydrologic soil group classification of C, with some B class soils in various portions of the watershed. Several small ponds were included in the detailed study, including one pond on the upper portion of the main reach, two basins on the main reach (on Ford Motor Company Plant property) and two other ponds located on tributaries draining into the main reach of Hite Creek. The majority of the watershed contains floodplains occupied with residential, commercial and industrial structures causing obstructions and encroachments upon the stream. In addition, several bridges and culverts located along Hite Creek affect the flood profiles for this creek.

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for the study streams. Standard hydrologic methods were used to determine the discharge rates. These flooding events have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any given year. Additionally, the peak discharge for the 1-percent-annual-chance return interval considering fully developed watershed conditions was determined for each stream. In modeling these return interval flood discharges, the corresponding design storm events from MSD were utilized. Due to a lack of existing gage data on or in close proximity to Hite Creek, model discharge output was verified by comparing it against the peak discharges determined from regression equations for Jefferson County.

To predict flow values associated with particular 24 hour storms, detailed hydrologic models were developed for the study watersheds using the U.S. Army Corps of Engineers' HEC-HMS software (Version 2.2.2). The HEC-HMS models were then run with the 10-, 2-, 1-, and 0.2-percent-annual-chance events using a standard SCS Type II 24 hour design storm distribution. Rainfall depth values were based on precipitation depth values from TP-40 (Reference 11). Although precipitation depth values for the 0.2-percent-annual-chanc event are not available in TP-40, the 0.2-percent-annual-chance value was extrapolated from a logarithmic graph of the published precipitation values for higher frequency events. As accurate calibration data does not exist for Brush Run, Hite or Weicher Creeks the model discharges were verified by comparison of discharges based upon regression equations for rural and urban streams in Jefferson County presented in "Estimation of Peak-Discharge Frequency of Urban Streams in Jefferson County, Kentucky, U.S. Geological Survey, Water-Resources Investigations Report 97-4219" (Reference 14).

The hydrologic physical parameters, including storage areas and CNs for the hydrologic models were obtained using GIS applications contained in ESRI's ArcView software package. Datasets used in the watershed models were obtained from public sources or created specifically for the modeling process. Watershed delineation was performed by field reconnaissance and digitizing watersheds using digital topographic information along with aerial orthophotography supplied by the Louisville and Jefferson County Information Consortium (LOJIC). Once the watershed boundaries were determined, the FIS study sub-areas were further subdivided into smaller units based upon storm water structures/network, significant storage areas, and outfall distribution in each watershed.

Soil Conservation Service (SCS) CN methodology was used to simulate the infiltration and runoff relationships among the urban development in the subbasins. The SCS CN classification is based upon land use and hydrologic soil groups. Digitized datasets describing generalized land use were obtained from LOJIC covering each of the detailed study watersheds. Using the land use and soils datasets, existing and fully developed composite CNs were developed for each subbasin. These composite CNs were derived from CNs associated with each unique combination of land use and hydrologic soil group. The CNs were based on standard SCS convention and methodology.

The time of concentration for each subbasin was determined using Manning's equation relationships and standard TR-55 methodology. The longest flow path for each subbasin was determined and different flow regimes were assigned to segments of these flow paths.

To simulate the hydrograph generation and transformation, SCS Unit Hydrograph methodology was used. Stream base-flow was not included in the original FIS models; therefore they are not included in this DFIRM detailed study. The SCS hydrograph method requires a lag time for each subbasin, which is 60% of the calculated time of concentration.

In the Hite Creek model, the hydrograph attenuations are simulated by both reservoir storage-discharge routing behind specific road crossings (bridges, culverts) and by the Muskingum-Cunge 8-point Cross Section method for the longer main stream reaches. The channel length and slope for the Muskingham-Cunge method were determined from the GIS data and the cross section geometry was based upon field reconnaissance observations and GIS data for the channels in specific locations.

POND CREEK WATERSHED

New detailed hydrologic analyses were performed for the following streams in the Pond Creek Watershed: Blue Spring Ditch, Fishpool Creek, Northern Ditch, Pond Creek, Southern Ditch, and Wilson Creek.

Pond Creek Watershed

Approximately a quarter of Jefferson County (~400 sq mi) is located in the Pond Creek watershed (~94 sq mi). The watershed begins in the central to southern part of the county, heads in the southwest direction, and outlets in Salt River in Bullitt County. A very small portion of the watershed dips into northern Bullitt County.

The data from two USGS gages located in the watershed was used in the study: "03302000 – Pond Creek near Louisville, KY" and "03301940 –Northern Ditch at Okolona, KY." (The data from a third gage, "03302030 – Pond Creek at Pendleton Road NEAR LOUISVILLE, KY" was not used in the study because it only has 3 years of data, and it did not record either the March 1, 1997 storm or June 28, 1999 storm.)

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for the watershed. Standard hydrologic methods were used to determine the discharge rates required for the FIS (10-, 2-, 1-, and 0.2-percent-annual-chance return interval flood discharges). The recurrence intervals have been selected by FEMA as having special significance for floodplain management and for flood insurance rates. In addition, a 1-percent-annual-chance return interval flood based on future conditions was developed.

To predict flow values, one detailed hydrologic model was developed for the Pond Creek watershed using the U.S. Army Corps of Engineers' HEC-HMS Version 2.2.2 software. The HEC-HMS model was developed using GIS applications and the HEC-GeoHMS extension for ESRI's ArcView software package. The HEC-HMS analyses provided peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance existing conditions event and 1-percent-annual-chance future conditions event based on precipitation values from the MSD Design Manual, Exhibit 10-3. Although a 0.2-percent-annual-chance precipitation value is not available in the design manual, the 0.2-percent-annual-chance value was extrapolated from a graph of the published precipitation values for the remaining events.

The new detailed hydrologic analysis that was developed for the Pond Creek Watershed was designed to work with an unsteady-state HEC-RAS model.

A separate detailed hydrologic model, disconnected from the larger Pond Creek model, was developed for the lower portion of Wet Woods Creek. This model is for the portion of the channel downstream of I-65 to the confluence with Southern Ditch. This area was realigned several years ago and updated hydrology had not yet been created. The realignment of Wet Woods Creek allows for additional storage during low frequency floods. The model allows for HEC-RAS to take this additional storage in the Wet Woods realignment area into account.

Subbasins for Pond Creek were delineated and named based on MSD's WMPD (Watershed Master Plan Drainage Basins) polygon. Upstream of the Northern Ditch / Southern Ditch confluence, 50-acre basins were delineated manually, using LOJIC's 2-foot contour data, hydrographic lines, drainage lines, and roadway edge shapefiles. Downstream of the confluence, basins were also subdivided into smaller units based upon hydrologic characteristics.

These digital subbasins were used to determine contributing drainage area. The cumulative contributing drainage area was determined by establishing subbasin connectivity, which was based on the hydrographic lines and drainage lines shapefiles. Total area was calculated from all subbasins draining to a specific outlet point.

Soil Conservation Service (SCS) CN methodology was used to simulate the infiltration and runoff relationships among the subbasins. The SCS CN classification for existing conditions is based upon Jefferson County land use and USGS hydrologic soil groups. SCS CNs for the 1-percent-annual-chance future conditions model was based upon Jefferson County zoning and USGS hydrologic soil groups. All three datasets were obtained from LOJIC.

Using these datasets, two sets of composite CNs were developed for each subbasin. These composite CNs were derived from CNs associated with each unique combination of land use and hydrologic soil groups for the existing conditions model and a unique combination of zoning and hydrologic soil groups for the future conditions model. The CNs were based on standard SCS convention and methodology. More information pertaining to this methodology can be found in the document "Urban Hydrology for Small Watersheds, TR-55" (U.S. Department of Agriculture, Natural Resources Conservation Service 2nd Edition, June 1986) (Reference 12).

The time of concentration for each subbasin was determined using standard TR-55 methodology and Manning's equation relationships. The longest flow path for each subbasin was determined and different flow regimes were assigned to segments of these flowpaths. The regimes consisted of overland sheet flow, shallow concentrated flow, and main channel flow. To simulate the hydrograph generation and transformation, SCS Unit Hydrograph methodology was used.

To better simulate the hydrograph attenuation that occurs over longer stream reaches, reach routing was applied within appropriate subbasins. The Muskingum-Cunge 8-point section method was used in the model.

Rating curves for large storage areas were developed, including 1 storage basin located at General Electric that contributes to Blue Spring Ditch. Also, rating curves were developed for the Wildwood Country Club pond and Woodhaven Country Club pond, which are both located along Fern Creek. The rating curves that were developed for the 2001 Southern Ditch / Fishpool Creek LRFP Study were imported into the model.

Calibration and verification of hydrologic models was accomplished using flow and rainfall gages located within the watershed, and USGS's Jefferson County regression equations. Area-weighted comparison of flood discharges obtained from gages for verification purposes was also used for model verification. High water marks from historical floods are also useful when calibrating a model to that particular storm event. These instances were used to compare to and calibrate the Pond Creek HEC-HMS model.

Wet Woods Creek

A few years ago, a portion of Wet Woods Creek was realigned from approximately 2500 feet upstream of Outer Loop to just downstream of I-65. A West Wetlands and East Wetlands were constructed to be used as storage for floodwaters. The Wet Woods redelineation area is located on Waste Management's property south of the landfill.

No new detailed hydrologic analyses were performed for the portion of Wet Woods Creek that was realigned, but backwater from Southern Ditch and overflow from Northern Ditch provided changes in flood elevations for the realigned portion of Wet Woods Creek.

UPPER MILL CREEK WATERSHED

No new hydrologic analyses were performed for City Park Ditch, but backwater from Upper Mill Creek is the controlling factor on the lower portion on City Park Ditch. The elevation for the upper reach is based on a storage elevation behind the culvert headwall at Park Road.

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods of each flooding source studied in detail are shown in Table 6. In addition, peak discharges were calculated for a 1-percent-annual-chance "fully developed" condition for all new detailed studies.

TABLE 6 – Summary of Discharges

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event (cfs)	2% Annual Chance Event (cfs)	1% Annual Chance Event (cfs)	1% Annual Chance Fully-Developed Event (cfs)	0.2% Annual Chance Event (cfs)
ANITA BRANCH						
1,740 feet upstream of confluence of Pennsylvania Run	0.66	381	532	597	846	770
Just downstream of Cedar Creek Road	0.28	195	272	306	429	396
Just upstream of Cedar Creek Road	0.09	70	99	110	148	140
BEARGRASS CREEK						
At pumping plant	60.9	N/A	N/A	2,700	N/A	N/A
BEE LICK CREEK						
At mouth	6.2	N/A	N/A	2,440	N/A	N/A
At Gene Snyder Freeway	4.0	N/A	N/A	2,170	N/A	N/A

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
At Mitchell Hill Road	2.8	N/A	N/A	1,640	N/A	N/A
BIG RUN DIVERSION & BIG RUN CREEK						
At mouth	3.9	N/A	N/A	1,590	N/A	N/A
Just downstream of Illinois Central Railroad	3.4	N/A	N/A	1,330	N/A	N/A
Just upstream of Illinois Central Railroad	3.4	N/A	N/A	2,780	N/A	N/A
Just downstream of Arnoldtown Road	2.7	N/A	N/A	2,940	N/A	N/A
Just upstream of Arnoldtown Road	2.2	N/A	N/A	2,610	N/A	N/A
At St. Andrew's Church Road	1.0	N/A	N/A	1,400	N/A	N/A
BIG RUN DITCH						
At mouth	1.8	N/A	N/A	1,290	N/A	N/A
At Upper Hunters Trace	1.5	N/A	N/A	1,200	N/A	N/A
At Lower Hunters Trace	0.2	N/A	N/A	310	N/A	N/A
BLACK POND CREEK						
At mouth	3.0	N/A	N/A	1,220	N/A	N/A
At Greenwood Road	0.6	N/A	N/A	380	N/A	N/A
At Terry Road	0.4	N/A	N/A	310	N/A	N/A
BLUE SPRINGS DITCH**						
At mouth	2.9	973	1,114	1,133	1,255	1,368
At Fern Valley Road	2.7	1,002	1,149	1,168	1,192	1,236
BOXWOOD DITCH						
At mouth	1.3	N/A	N/A	780	N/A	N/A
Just downstream of confluence of East Branch Boxwood Ditch	1.2	N/A	N/A	780	N/A	N/A
Just upstream of confluence of East Branch Boxwood Ditch	0.6	N/A	N/A	510	N/A	N/A
At Lynnview Drive	0.5	N/A	N/A	470	N/A	N/A
BROOKLAWN TRIBUTARY						
At mouth	1.7	660	1,150	1,400	N/A	1,900
At Bon Air Avenue	0.5	375	645	790	N/A	1,210
BROWNSBORO DITCH						

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
280 feet upstream of confluence of Little Goose Creek	0.13	124	183	199	209	358
BRUSH RUN UPPER						
At mouth	3.6	1,692	2,579	2,986	3,456	4,096
At Johnson Road	3.3	1,526	2,316	2,687	3,147	3,688
Just upstream of Polo Fields Lane	1.5	316	580	710	844	1,060
BUECHEL BRANCH						
At mouth	4.5	N/A	N/A	2,640	N/A	N/A
At Hikes Lane	4.2	N/A	N/A	2,720	N/A	N/A
At Old Shepherdsville Road	3.8	N/A	N/A	2,640	N/A	N/A
Just upstream of Buechel Terrace	1.6	N/A	N/A	1,450	N/A	N/A
CANE RUN DITCH						
At mouth	2.1	N/A	N/A	1,240	N/A	N/A
Just upstream of confluence of Boxwood Ditch	0.8	N/A	N/A	460	N/A	N/A
At Illinois Central Railroad	0.5	N/A	N/A	370	N/A	N/A
At Shanks Lane	0.25	N/A	N/A	270	N/A	N/A
CITY PARK DITCH						
At mouth	0.99	666	829	919	923	1125
Just upstream of Valley View Drive	0.35	287	414	469	483	611
COOPER CHAPEL BRANCH						
At mouth	1.0	N/A	N/A	600	N/A	N/A
At Preston Highway	0.8	N/A	N/A	540	N/A	N/A
At Chapel Hill Road	0.6	N/A	N/A	500	N/A	N/A
DREWS FORK						
310 feet downstream of Cooper Chapel Road	0.30	167	235	264	376	343
Just upstream of Cooper Chapel Road E	0.24	144	202	227	324	293
DURBIN BRANCH						
195 feet downstream of Cooper Chapel Road SE	0.22	139	194	218	308	283
Just upstream of Cooper Chapel Road SE	0.15	92	130	146	199	186

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
EAST BRANCH BOXWOOD DITCH						
At mouth	0.51	N/A	N/A	360	N/A	N/A
At South Crums Lane	0.39	N/A	N/A	330	N/A	N/A
FERN CREEK						
At mouth	9.9	N/A	N/A	4,050	N/A	N/A
At Flirtation Walk – Whispering Hills Apartments	9.0	N/A	N/A	4,050	N/A	N/A
FILSON FORK						
At mouth	0.5	N/A	N/A	430	N/A	N/A
At Preston Highway	0.4	N/A	N/A	320	N/A	N/A
At Raydale Drive	0.1	N/A	N/A	200	N/A	N/A
FISHPOOL CREEK**						
At mouth	5.7	1,399	1,637	1,688	1,783	1,784
At South Park Road	4.0	917	1,214	1,321	1,453	1,561
Just upstream of confluence of Manslick Branch	3.0	111	122	148	377	708
At Gene Snyder Freeway	2.8	1,367	1,855	2,022	2,242	2,386
At Preston Highway	0.8	545	717	783	862	917
FLOYDS FORK						
At Bardstown Road	213	21,000	34,000	38,800	N/A	52,000
At Old Taylorsville Road	138	19,040	28,000	32,500	N/A	45,600
4,600 feet downstream of Bardstown Road *	217	23,800	34,600	42,100	44,900	55,800
450 feet downstream of confluence of Chenoweth Run*	189	22,800	32,800	39,800	42,200	52,300
7,850 feet downstream of confluence of Cane Run*	167	22,200	32,800	39,800	42,200	52,300
1,550 feet upstream of confluence of Brush Run*	138	20,200	28,900	34,800	36,000	45,600
1,250 feet downstream of confluence of Chenoweth Run A*	96	16,400	23,200	28,000	36,200	28,900
13,315 feet upstream of Aiken Road	83	15,200	21,100	25,500	26,400	33,000
GARDENS TRIBUTARY						
At mouth	0.8	N/A	N/A	750	N/A	N/A
At Lees Lane	0.6	N/A	N/A	650	N/A	N/A
GENE SNYDER TRIBUTARY						

Flooding Source & Location	DA (mi²)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
100 feet downstream of I-265 South (Gene Snyder Freeway)	0.51	222	298	330	419	400
250 feet upstream of I-265 North (Gene Snyder Freeway)	0.47	214	288	319	409	388
GOOSE CREEK						
Just upstream of Lakeland Road	1.9	1,083	1,630	1,870	1,990	2,530
2,430 feet upstream of Lakeland Road	1.7	1,035	1,550	1,760	1,895	2,390
Just downstream of confluence of LeFores Branch	1.6	1,016	1,513	1,730	1,820	2,300
175 feet upstream of confluence of LeFores Branch	1.2	830	1,216	1,386	1,474	1,840
480 feet downstream of Stone Gate Road	1.1	770	1,130	1,280	1,690	1,360
520 feet upstream of Homewood Drive	0.84	620	880	1,000	1,064	1,300
575 feet upstream of North Osage Road	0.58	470	670	750	795	980
235 feet downstream of Cave Spring Place	0.40	260	360	410	534	410
GREASY DITCH						
At mouth	6.8	N/A	N/A	3,330	N/A	N/A
At Preston Highway	2.0	N/A	N/A	1,140	N/A	N/A
At Poplar Level Road	0.7	N/A	N/A	580	N/A	N/A
HARRODS CREEK						
585 feet upstream of US Highway 42	104.9	13,980	21,360	25,190	27,690	34,590
13,645 feet upstream of confluence of Harrods Creek – Wolf Pen Branch Tributary	95.0	13,930	21,660	25,710	28,060	35,650
HEATHERFIELD DITCH						
Just upstream of Crums Lane	0.58	309	444	494	505	630
840 feet downstream of Crums Lane	0.72	265	425	479	490	607
HITE CREEK						

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
2,925 feet upstream of Worthington Lane	4.9	1,558	2,078	2,259	2,431	2,689
270 feet upstream of Worthington Lane	4.0	1,541	2,280	2,597	2,830	3,444
250 feet upstream of Ballardsville Road	3.7	1,509	2,201	2,495	2,671	3,274
175 feet upstream of Maple Brook Drive	2.4	1,030	1,398	1,553	1,628	1,951
105 feet downstream of Westport Road	1.7	912	1,239	1,375	1,479	1,761
3,730 feet downstream of Westport Road	1.0	494	762	879	961	1,146
855 feet downstream of Collins Lane	0.2	13	82	114	184	182
HUFF LANE TRIBUTARY						
At mouth	0.9	N/A	N/A	770	N/A	N/A
At Lees Lane	0.6	N/A	N/A	650	N/A	N/A
LEFORES BRANCH						
425 feet upstream of confluence of Goose Creek	0.31	260	360	410	410	534
LITTLE BEE LICK CREEK						
At mouth	N/A	N/A	N/A	1,850	N/A	N/A
At Mount Holly Road	2.1	N/A	N/A	1,610	N/A	N/A
At Charlene Drive	N/A	N/A	N/A	1,530	N/A	N/A
LITTLE GOOSE CREEK						
565 feet downstream of I-71 South	4.2	1,391	1,832	1,975	2,268	2,011
365 feet upstream of I-71 North	4.0	1,360	1,795	1,936	1,972	2,223
980 feet upstream of I-71 North	3.9	1,609	2,425	2,802	2,887	3,741
2,000 feet upstream of I-71 North	3.7	1,551	2,331	2,687	2,772	3,551
1,240 feet downstream of Brownsboro Road	3.5	1,473	2,186	2,504	2,568	3,298
570 feet upstream of Brownsboro Road	3.3	1,454	2,141	2,443	2,481	3,174
255 feet downstream of confluence of Springhurst Creek	3.0	1,360	1,978	2,250	2,281	2,908

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
Just upstream of Ten Broeck Way	2.4	955	1,307	1,477	1,521	1,952
510 feet downstream of North Hurstbourne Parkway	1.7	501	816	937	968	1,208
325 feet upstream of North Hurstbourne Parkway	1.7	495	806	925	955	1,195
300 feet downstream of confluence of Lilac Run	1.4	439	720	818	842	993
300 feet upstream of Wynbrooke Circle	1.1	314	526	555	640	568
215 feet upstream of Springhurst Boulevard	0.99	444	597	685	986	723
300 feet upstream of Westport Road	0.82	305	537	645	694	981
LILAC RUN						
85 feet upstream of Wynbrooke Circle	0.35	235	360	407	569	418
1,765 feet upstream of Wynbrooke Circle	0.30	210	314	354	354	493
LONG RUN						
Just upstream of confluence of Shakes Run	28	N/A	N/A	10,585	N/A	N/A
Just upstream of confluence of Spotswood Run	24.9	N/A	N/A	9,735	N/A	N/A
Just upstream of I-64	23.9	N/A	N/A	9,674	N/A	N/A
Just upstream of confluence of South Long Run	23.2	N/A	N/A	9,612	N/A	N/A
Just upstream of Shelbyville Road	15.0	N/A	N/A	6,490	N/A	N/A
Just downstream of confluence of Long Run – Tributary 2	13.2	N/A	N/A	6,197	N/A	N/A
Just downstream of confluence of Tater Run	6.9	N/A	N/A	3,480	N/A	N/A
Just downstream of confluence of Lang Run	5.3	N/A	N/A	2,676	N/A	N/A
845 miles upstream of Long Run Road	2.3	N/A	N/A	1,345	N/A	N/A
LOVVORN CREEK						

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
2480 feet upstream of confluence of Pennsylvania Run	1.3	621	862	965	1,250	1,235
Just downstream of confluence of Durbin Branch	0.80	448	629	703	962	882
Just downstream of confluence of Drews Fork	0.58	314.3	441	487	667	607
185 feet downstream of Cooper Chapel Road	0.23	139	194	210	280	260
2,385 feet upstream of Cooper Chapel Road W	0.23	135	189	205	274	255
Just upstream of Beulah Church Road S	0.11	71	99	111	162	143
LOWER GARRISON DITCH						
At mouth	0.07	N/A	N/A	180	N/A	N/A
LYNNVIEW DITCH						
At mouth	1.5	N/A	N/A	570	N/A	N/A
Just downstream of Dover Road	1.1	N/A	N/A	550	N/A	N/A
Just upstream of Dover Road.	1.1	N/A	N/A	650	N/A	N/A
Just downstream of South Crums Lane	0.7	N/A	N/A	380	N/A	N/A
At Farnsley Road	0.3	N/A	N/A	275	N/A	N/A
MANSLICK BRANCH						
At mouth	0.9	N/A	N/A	600	N/A	N/A
At Preston Highway	0.8	N/A	N/A	540	N/A	N/A
At Glenrose Road	0.5	N/A	N/A	430	N/A	N/A
MIDDLE FORK BEARGRASS CREEK						
At CSX Railroad	20.4	3,660	5,530	6,400	N/A	8,850
At Old Cannons Lane	18.9	3,350	5,100	5,900	N/A	8,200
At Whipps Mill Road	4.3	1,500	1,900	2,100	N/A	2,700
MILL CREEK						
At mouth	15.4	N/A	N/A	1,600	N/A	N/A
Just downstream of Moorman Road	13.1	N/A	N/A	2,260	N/A	N/A
Just upstream of Moorman Road	13.1	N/A	N/A	4,140	N/A	N/A
Just upstream of confluence of Valley Creek	7.8	N/A	N/A	2,480	N/A	N/A
At Greenwood Road	3.3	N/A	N/A	1,670	N/A	N/A

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
Just upstream of confluence of Garrison Ditch	N/A	N/A	N/A	210	N/A	N/A
MILL CREEK CUTOFF AND UPPER MILL CREEK						
At mouth	18.4	N/A	N/A	4,700	N/A	N/A
Just upstream of confluence of Garrison Ditch	18.1	N/A	N/A	6,200	N/A	N/A
Just upstream of confluence of Huff Lane Tributary and Gardens Tributary	16.5	N/A	N/A	5,860	N/A	N/A
Just upstream of confluence of Cane Run Ditch	9.2	N/A	N/A	5,340	N/A	N/A
Just upstream of confluence of Lynnview Ditch	7.7	N/A	N/A	4,620	N/A	N/A
Just upstream of confluence of Heatherfield Ditch	4.2	N/A	N/A	3,020	N/A	N/A
Just upstream of confluence of City Park Ditch	2.8	N/A	N/A	2,570	N/A	N/A
MUD CREEK						
At mouth	3.9	N/A	N/A	2,370	N/A	N/A
At Gene Snyder Freeway	2.8	N/A	N/A	2,050	N/A	N/A
Just upstream of confluence of Mud Creek – Eastview Branch	1.6	N/A	N/A	1,470	N/A	N/A
NORTHERN DITCH**						
At mouth	28.9	3,436	3,879	3,523	3,815	4,200
At Grade Lane	22.8	1,700	1,997	2,273	2,669	2,896
At Preston Highway	11.6	2,516	3,300	3,287	3,295	3,272
OHIO RIVER						
At McAlpine Lock and Dam	91,170	N/A	N/A	812,000	N/A	940,000
PENNSYLVANIA RUN						
Just upstream of Mount Washington Road	6.5	1,725	2,507	2,819	3,229	3,685
Just downstream of confluence of Anita Branch	6.2	1,703	2,476	2,784	3,195	3,639
1,150 feet upstream of confluence of Anita Branch	5.5	1,608	2,349	2,646	3,069	3,464
1,415 feet upstream of confluence of Anita Branch	5.1	1,510	2,218	2,503	2,943	3,283
580 feet downstream of confluence of Lovvorn Creek	4.9	1,491	2,193	2,476	2,916	3,249
At McNeely Lake Dam	4.9	1,504	2,215	2,500	2,946	3,273

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
530 feet downstream of Cooper Chapel Road	5.4	1,886	2,475	2,786	3,373	3,406
700 feet downstream of John Paul Lane	2.8	1,525	1,993	2,206	2,686	2,650
Just downstream of confluence of Gene Snyder Tributary	2.4	1,290	1,778	2,012	2,727	2,568
135 feet downstream of E Manslick Road	1.8	1,094	1,520	1,740	2,365	2,242
Just downstream of confluence of Pohlmann Branch	1.5	986	1,371	1,577	2,010	2,033
125 feet downstream of Rochelle Road	0.80	591	810	954	1,163	1,253
1,320 feet upstream of Rochelle Road (lower)	0.73	547	749	881	1,070	1,146
1,160 feet upstream of Applegate Lane	0.65	496	681	803	973	1,031
1,520 feet upstream of Vandre Avenue	0.51	398	544	649	773	827
Just upstream of Outer Loop	0.38	301	416	488	567	626
Just upstream of Vaughn Mill Road	0.32	284	383	426	485	532
POHLMANN BRANCH						
170 feet downstream of Pennsylvania Run Road	0.71	404	572	646	880	831
3,285 feet upstream of Vaughn Mill Road	0.58	334	464	520	720	674
Just upstream of Beulah Church Road N	0.09	81	110	118	141	138
POND CREEK**						
At Blevins Gap Road	81.2	7,009	8,303	8,801	9,478	1,0048
At Stonestreet Road	71.4	6,978	8,050	8,421	8,910	9,339
At Manslick Road	63.8	6,724	7,197	7,140	7,112	7,249
Just upstream of confluence of Blue Lick Creek	57.5	5,643	6,362	6,665	7,113	7,526
PONDER CREEK						
At mouth	1.5	N/A	N/A	1,000	N/A	N/A
Just downstream of Stonestreet Road	N/A	N/A	N/A	940	N/A	N/A

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
Just upstream of Stonestreet Road	N/A	N/A	N/A	1,180	N/A	N/A
At East Pages Lane	0.8	N/A	N/A	1,080	N/A	N/A
ROBERSON RUN						
At mouth	1.3	N/A	N/A	1,370	N/A	N/A
At St. Rita Drive	1.2	N/A	N/A	1,300	N/A	N/A
At Judge Boulevard	1.0	N/A	N/A	1,200	N/A	N/A
ROLLING HILLS BRANCH						
625 feet upstream of confluence of Little Goose Creek	0.65	559	775	867	878	1,092
180 feet upstream of Goose Creek Road	0.33	273	370	402	402	477
SLATE RUN						
At mouth	1.8	N/A	N/A	1,400	N/A	N/A
At Third Street Road	1.3	N/A	N/A	1,210	N/A	N/A
At St. Anthony's Church Road	1.3	N/A	N/A	1,140	N/A	N/A
SOUTH FORK BEARGRASS CREEK						
At pumping plant	50.8	6,740	8,880	9,700	10,610	12,000
Just downstream of confluence of Middle Fork Beargrass Creek	50.6	6,730	8,860	9,680	10,620	11,980
At Baxter Avenue	25.2	6,310	9,070	10,580	11,680	13,590
At Breckenridge Lane	23.6	5,810	8,250	9,670	10,580	12,170
At Oak Street	22.3	4,940	6,940	7,900	8,510	9,400
At Eastern Parkway	21.4	4,660	6,600	7,520	7,990	8,600
At tributary from subbasin 7	19.8	4,040	5,430	6,010	6,740	7,530
At Trevillian Way	17.1	3,080	3,970	4,470	4,810	5,470
At tributary from subbasin 9B	16.6	3,080	4,140	4,610	4,860	5,480
At Newburg Road	15.6	3,000	4,160	4,580	4,880	5,520
At I-264 (Watterson Expressway)	14.8	3,230	4,160	4,520	4,760	5,520
Just downstream of confluence of Buechel Branch	12.7	2,290	3,270	3,810	4,260	5,850
Just upstream of confluence of Buechel Branch	8.0	1,570	2,580	2,880	3,020	3,420
Just upstream of Downing Way	7.1	2,360	3,210	3,520	3,710	4,330

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
At Hikes Lane	4.7	1,060	1,530	1,730	1,870	2,250
Just upstream of Drybed Reservoir	1.3	1,430	2,000	2,240	2,390	2,860
At Stony Brook Drive	1.1	1,240	1,710	1,900	2,010	2,420
At Taylorsville Road	0.7	780	1,090	1,220	1,270	1,540
SOUTHERN DITCH**						
At mouth	25.9	3,195	3,354	3,359	3,602	3,783
Just upstream of confluence of Wilson Creek	19.8	1,861	2,367	2,561	2,857	2,986
Just upstream of confluence of Fishpool Creek	2.8	870	997	1,070	1,140	1,236
At Shepherdsville Road	0.4	313	476	542	650	737
SPRINGHURST CREEK						
560 feet upstream of confluence of Little Goose Creek	0.62	406	686	802	807	1,125
STEPHAN DITCH						
At mouth	1.3	N/A	N/A	725	N/A	N/A
Just downstream of Dorrance Drive	1.0	N/A	N/A	580	N/A	N/A
Just upstream of Dorrance Drive	1.0	N/A	N/A	720	N/A	N/A
Just downstream of Stephan Drive	0.6	N/A	N/A	435	N/A	N/A
Just upstream of Stephan Drive	0.6	N/A	N/A	485	N/A	N/A
At Hillview Drive	0.5	N/A	N/A	435	N/A	N/A
UPPER GARRISON DITCH						
At Murray Ln.	0.2	N/A	N/A	250	N/A	N/A
At Greenbelt Hwy.	0.1	N/A	N/A	130	N/A	N/A
VALLEY CREEK						
At mouth	4.5	N/A	N/A	2,450	N/A	N/A
Just upstream of confluence of Ponder Creek	2.6	N/A	N/A	1,470	N/A	N/A
Just upstream of confluence of Stephan Ditch	1.3	N/A	N/A	780	N/A	N/A
At West Pages Lane	1.0	N/A	N/A	620	N/A	N/A
At Greenwood Lane	0.2	N/A	N/A	170	N/A	N/A
WEAVER RUN						
At mouth	N/A	N/A	N/A	600	N/A	N/A

Flooding Source & Location	DA (mi^2)	10% Annual Chance Event	2% Annual Chance Event	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
At Pendelton Road	2.2	N/A	N/A	390	N/A	N/A
At Dixie Highway	N/A	N/A	N/A	290	N/A	N/A
WEICHER CREEK						
At mouth	2.0	N/A	N/A	1,340	N/A	N/A
At Blossomwood Drive	1.6	700	1,030	1,200	N/A	1,650
At Browns Lane	1.2	650	800	900	N/A	1,200
WET WOODS CREEK						
At mouth	3.0	N/A	N/A	1,220	N/A	N/A
At Interstate 65	1.5	N/A	N/A	930	N/A	N/A
At Preston Hwy.	0.7	N/A	N/A	600	N/A	N/A
WILSON CREEK**						
At mouth	6.1	1,476	1,528	1,485	1,521	1,638
At I-265 (Gene Snyder Freeway)	5.8	1,510	1,771	1,865	1,983	2,138
At National Turnpike	0.51	405	586	709	726	883

* Discharges supplied by Section 22 USACE Study
** Discharges reported from unsteady state model, and do not necessarily correlate with maximum WSE

Stillwater elevations (NAVD) for 1- and 0.2-percent-annual-chance floods are listed in Table 7, "Summary of Stillwater Elevations." These are streams where the elevations create a flat profile along the studied reach.

TABLE 7 – Summary of Stillwater Elevations (NAVD)

Flooding Source & Location	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
City Park Ditch			
(within community)	447.5	-	-
Gardens Tributary			
(within community)	435.0	-	-
Harrods Creek			
(within community)	451.5	452.5	457.1
Heatherfield Ditch			
(within community)	447.1	-	-
Huff Lane Tributary			
(within community)	435.0	-	-
Long Run			
(within community)	440.5	-	-

Flooding Source & Location	1% Annual Chance Event	1% Annual Chance Fully-Developed Event	0.2% Annual Chance Event
Mill Creek			
At mouth	443.2	-	-
Just upstream of floodwall	429.0	-	-
Just downstream of Moorman Road	429.0	-	-
Mill Creek Cutoff			
(within community)	435.0	-	-
Pond Creek			
Just upstream of pumping plant (stream mile 1.343)	429.7	430.9	432.1

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied in detail were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. This section is a compilation of hydraulic information from the 1994 FIS, as well as new detailed hydrologic analyses where streams were studied in detail.

Only streams that are being redelineated for the 2006 FIS using 1994 FIS data are mentioned in the "1994 FIS Analyses" section. All hydrologic data for new or revised detailed studies are located in the "New and/or Revised Analyses for 2006 FIS" section.

1994 FIS Analyses

For the 1994 hydraulic analyses, mapping developed by MSD to a scale of 1 inch equals 100 feet with a 2-foot contour interval and spot elevations were utilized.

Natural and bridge cross sections were obtained in the following manner: cross sections for the Ohio River were determined from detailed mapping developed for Ohio River Datum (ORD) to NGVD29 and updated with MSD mapping in the overbank areas. The Ohio River stream mileage as depicted in this study is "Official Stream Mileage" as agreed upon between Federal, State, and local agencies with jurisdiction within the study area. Therefore, measurable map distances between consecutive quarter mile points may not scale exactly. This is especially prevalent in the reach between stream miles 607.5 and 603.5 in the area covering the Falls of the Ohio and the three parts of the McAlpine Lock and Dam system. The Ohio River is unique in that the stream mileage runs from upstream (Pittsburgh, Pennsylvania) to the downstream terminus at the Mississippi River.

Prior to the start of the 1994 study, natural and bridge cross sections for each stream were plotted to review the previous studies. A field reconnaissance was made of each stream and bridge. MSD mapping provided locations of new bridges. The field reconnaissance included an inventory of the old bridge geometry (opening widths, piers, differences between thalweg, low steel, top of road, etc.). Any indication that a bridge had been replaced since the initial study or that the data in the original study were questionable resulted in a complete resurvey of the bridge. Approximately 166 bridges were surveyed for this study. Spot elevations on MSD mapping for most bridge decks provided another check. The thalwegs of most streams agreed closely with those determined in the initial studies. Data at surveyed bridges in this study together with the field reconnaissance verified the result.

One major difference between this study and the initial studies was the use of detailed mapping in overbank areas. Locations and limits of effective flow of the cross sections were made based on sketching the effective flow area of the 1-percent-annual-chance flood. Cross sections were digitized directly from MSD mapping and supplemented with channel sections.

Cross sections were located at bridges and at close intervals above and below the bridges in order to compute the headloss at structures. Natural ground sections were obtained at points between bridges. Areas that would be ineffective in conveying water downstream were not included.

Locations of the selected cross sections used in the hydraulic analyses have already been included in the MSD mapping database and are shown on the Flood Profiles and on the Flood Insurance Rate Map.

Stream mileage has been depicted at 0.01-mile intervals and it was also included in the MSD database.

Water surface elevations of floods of the selected recurrence intervals for Middle Fork Beargrass Creek and Brooklawn Tributary, and the 0.2-percent-annual-chance elevations for the Ohio River were computed using the HEC-2 computer program (Reference 16).

Water surface elevations of the 1-percent-annual-chance flood for the remaining streams were computed using an updated version of the HEC-2 computer program (Reference 9).

Flood profiles were computer generated and the computed water surface elevations are considered accurate to 0.1 foot for the 1-percent-annual-chance flood. All bridges spanning the Ohio River from Kentucky to Indiana had low steel elevations varying between 457.5 and 496.5 feet (NAVD88).

Starting water surface elevations were computed using the slope area method for the majority of the streams. Below is a summary of the streams for which this method was not appropriate. The Ohio River profile is a portion of the complete river model. Starting elevations for the Ohio River model were developed from the stage versus discharge relationship determined for gaged sites at mile 603.4 and mile 720.5. This results in a starting elevation of 442.22 feet at mile 630.50 and 449.67 feet at mile 603.5 (NAVD88).

Flood profiles were drawn showing the computed water surface elevations for floods of the selected recurrence intervals. In cases where the 2-percent and 1-percent-annual-chance flood elevations are close together, due to limitations of the profile scale, only the 1-percent-annual-chance profile has been shown.

Detail-studied streams that were not re-studied as part of this map update may include a "profile base line" on the maps. This "profile base line" provides a link to the flood profiles included in the Flood Insurance Study report. The detail-studied stream centerline may have been digitized or redelineated as part of this revision. The "profile base lines" for these streams were based on the best available data at the time of their study and are depicted as they were on the previous FIRMs. In some cases where improved topographic data was used to redelineate floodplain boundaries, the "profile base line" may deviate significantly from the channel centerline or may be outside the Special Flood Hazard Area (SFHA).

Areas of the community protected by levees are subject to potential risk due to possible failure or overtopping of the levees. These areas were delineated by applying the 0.2-percent-annual-chance elevation determined from the "without levee" analysis.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

The water surface elevations for the 1-percent-annual-chance flood for all remaining streams studied by approximate methods were computed using Manning's Formula. Cross sections were obtained from maps and field reconnaissance but were not field surveyed. Bridge and culvert data were obtained only when there was an indication that a significant backwater effect would result. These bridges were hand measured but not field surveyed. Slopes for Manning's Formula were based on the streambed profiles obtained from topographic mapping (Reference 17).

The 1-percent-annual-chance elevation data on all streams studied by approximate methods were based on slope-area computations, or the 1-percent-annual-chance backwater elevation from the receiving stream, whichever controlled.

All elevations in the 1994 FIS were referenced to NGVD29, but have been shifted to the current vertical datum, NAVD88. In some cases, it was necessary to convert data from the Ohio River Datum (ORD) or the Louisville City Datum.

New and/or Revised Analyses for 2006 FIS

Cross sections for all detailed study streams listed in Table 3, "Limits of 2006 FIS New Detailed and Limited Detailed Studies" were obtained by field surveys except for Long Run Creek. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

No new approximate studies were performed for the 2006 FIS.

Water surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-RAS computer software (Reference 18). Starting water surface elevations for Harrods Creek, Little Goose Creek, Long Run, Pennsylvania Run, and Pond Creek were determined by normal depth calculations. Starting water surface elevations for Floyds Fork, the upper portion of Goose Creek, and Heatherfield Ditch derived from known water surface elevations downstream of the starting point. Flood profiles were drawn showing computed water surface elevations for floods of the selected recurrence interval using FEMA's RASPLOT computer software (Reference 19).

Roughness coefficients (Manning's "n") were assigned on the basis of field inspections of channel and floodplains for detailed studied streams under present conditions. 2003 aerial photography obtained from LOJIC was also used to establish the roughness coefficients. Channel and overbank values for both redelineated and new detailed study streams are listed below in Table 8.

All new detailed studies were performed using the methods described above. However, specific information about individual detailed studies is listed in the following section, which includes City Park Ditch, Long Run Creek, the Pond Creek Watershed, and South Fork Beargrass Creek.

<u>City Park Ditch</u>
A hydraulic model was not required for City Park Ditch, because the entire floodplain is drained by storm sewers. Backwater from Upper Mill Creek is the controlling factor on the lower portion on City Park Ditch. The elevation for the upper reach is based on a storage elevation behind the culvert headwall at Park Road.

<u>Long Run Creek</u>
Cross sections for the Long Run Creek limited detail study stream were gathered using topographic mapping with a contour interval of 2 feet which was obtained from LOJIC. The bridges along Long Run Creek were hand measured but not field surveyed and were included in the hydraulic modeling.

<u>Pond Creek Watershed</u>
An un-steady state HEC-RAS model was developed for the entire Pond Creek watershed which includes Blue Springs Ditch, Fishpool Creek, Northern Ditch, Pond Creek, Southern Ditch, and Wilson Creek. Inflow hydrographs for the unsteady state flow files originate on the HEC-HMS Model for the Pond Creek watershed which consists of over 800 subbasins. Manning's roughness values were defined using 2003 county imagery provided by LOJIC using the roughness tables from the HEC-RAS Reference Manual and checked using Cowan's method as suggested by FEMA. Permanent Ineffective Flow Areas are defined in the wide overbanks characteristic of the Pond Creek Watershed where restrictive fence lines and large or dense development exists - these areas are viewed largely as storage rather than areas of conveyance. Channel elevations and immediate overbanks were field surveyed along with structure sketches and roadway decks - at the limits of each surveyed cross section, elevation data from the LOJIC TIN (2004, NAVD88) was used to supplement the overbanks and extend the sections to contain the floodplain in most locations.

Specific storage areas considered in the unsteady-state hydraulic model are the following: Melco, Vulcan, the upper portion of Wet Woods Creek (left overbank area of Northern Ditch upstream of I-65), the lower portion of Wet Woods Creek (right overbank area downstream of I-65), Blue Spring Ditch (left overbank area near Jefferson Boulevard), Bee Lick Creek (upstream of I-265), Salt Block Creek (south of I-265 and west of W Manslick Road), and a mobile home park on Driftwood Drive, which is near a tributary of Pond Creek.

South Fork Beargrass Creek

The limits of the detailed hydraulic study for South Fork Beargrass Creek are from the flood pumping station on Beargrass Creek, approximately 300 feet downstream of Brownsboro Road, to stream mile 14.850 at Taylorsville Road.

The initial analysis of South Fork Beargrass Creek was divided into two separate HEC-RAS models. The main model (South Fork model) covered from the flood pumping station at stream mile 0.792 to stream mile 13.414, just downstream of the South Fork Dry Bed Reservoir. The second model (U/S Dry Bed model) covered from just upstream of Dry Bed Reservoir at stream mile 13.545 to stream mile 14.850 at Taylorsville Road. The division corresponded to the limits of the March 1997 observed water surface elevations to be used during calibration. The South Fork model has data available for calibration, while the U/S Dry Bed model does not. The two models were later combined into one continuous model to produce the final flood profiles.

The cross sections used in the model were surveyed within the stream corridor and extended across the floodplain using LOJIC data. The structure geometry was field measured.

The ineffective flow area option in HEC-RAS was used to delineate those portions of the floodplain with significantly reduced flow conveyance, such as inundated commercial/industrial areas, neighborhoods and areas of floodplain storage. Individual buildings were not coded into the cross sections.

Channel roughness coefficients (Manning's n) used in the model were selected using engineering judgment based on field observations and aerial photography. The Manning's n values ranged from 0.012 to 0.055 for the channel and from 0.03 to 0.08 for the overbanks.

The contraction and expansion coefficients associated with bridges usually have values of about 0.3 and 0.5, respectively. For the lower reaches of South Fork the flow is contained within the channel, both natural and concrete-lined, with little or no floodplain flow. In other areas, much of the floodplain flow is rendered ineffective due to buildings and other obstructions. For these conditions, contraction and expansion coefficients of 0.1 and 0.3, respectively, are more appropriate and were used. Otherwise, the usual contraction and expansion coefficient values of 0.3 and 0.5 for bridges and 0.6 and 0.8 for culverts were used. The model was calibrated to the 1997 flood event.

TABLE 8 – Manning's "n" Values

Flooding Source	Channel "n"	Overbank "n"
Anita Branch	0.035 – 0.045	0.045 – 0.070
Bee Lick Creek	0.050 – 0.070	0.055 – 0.075
Big Run Diversion & Big Run Creek	0.025 – 0.035	0.040 – 0.050
Big Run Ditch	0.030 – 0.035	0.040
Black Pond Creek	0.035	0.035 – 0.055
Blue Springs Ditch*	0.033 – 0.200	0.020 – 0.200
Boxwood Ditch	0.020 – 0.035	0.040
Brooklawn Tributary	0.031	0.035
Brownsboro Ditch	0.050	0.050
Brush Run Upper	0.043 – 0.068	0.047 – 0.100
Buechel Branch	0.035 – 0.065	0.045 – 0.080
Cane Run Ditch	0.035 – 0.045	0.040 – 0.060
Cooper Chapel Brook	0.060 – 0.080	0.050 – 0.080
Drews Fork	0.045	0.045 – 0.065
Durbin Branch	0.045 – 0.050	0.050 – 0.080
East Branch Boxwood Ditch	0.035 – 0.040	0.040 – 0.050
Fern Creek	0.055 – 0.075	0.055 – 0.090
Filson Fork	0.050 – 0.070	0.050 – 0.070
Fishpool Creek*	0.033 – 0.125	0.020 – 0.300
Floyds Fork	0.035 – 0.065	0.040 – 0.105
Gardens Tributary	0.040 – 0.060	0.060 – 0.065
Gene Snyder Tributary	0.040	0.070
Goose Creek	0.001 – 0.055	0.040 – 0.055
Greasy Ditch	0.045 – 0.050	0.040 – 0.080
Harrods Creek	0.030 – 0.045	0.045 – 0.065
Heatherfield Ditch	0.030 – 0.035	0.040 – 0.045
Hite Creek	0.014 – 0.065	0.014 – 0.100
Huff Lane Tributary	0.040 – 0.055	0.065
LeFores Branch	0.040 – 0.045	0.045 – 0.050
Little Bee Lick Creek	0.040 – 0.070	0.050 – 0.080
Little Goose Creek	0.015 – 0.050	0.015 – 0.100
Lilac Run	0.060	0.075 – 0.100
Long Run Creek	0.040	0.060
Lovvorn Creek	0.025 – 0.045	0.050 – 0.070
Lower Garrison Ditch	0.055 – 0.060	0.050 – 0.065
Lynnview Ditch	0.030 – 0.035	0.040 – 0.050
Manslick Branch	0.060 – 0.070	0.060 – 0.070
Middle Fork Beargrass Creek	0.035	0.045

Flooding Source	Channel "n"	Overbank "n"
Mill Creek	0.040 – 0.060	0.050 – 0.065
Mill Creek Cutoff & Upper Mill Creek	0.030 – 0.045	0.040 – 0.060
Mud Creek	0.040 – 0.065	0.045 – 0.065
Northern Ditch*	0.020 – 0.110	0.033 – 0.200
Ohio River	0.020 – 0.032	0.029 – 0.045
Pennsylvania Run	0.025 – 0.045	0.035 – 0.075
Pohlmann Branch	0.012 – 0.045	0.035 – 0.075
Pond Creek*	0.033 – 0.170	0.0115 – 0.400
Ponder Creek	0.012 – 0.035	0.045
Roberson Run	0.035 – 0.060	0.045 – 0.085
Rolling Hills Branch	0.050	0.050
Slate Run	0.075	0.040 – 0.080
South Fork Beargrass Creek	0.012 – 0.065	0.020 – 0.080
Southern Ditch*	0.033 – 0.125	0.020 – 0.200
Springhurst Creek	0.050	0.050
Stephan Ditch	0.025 – 0.035	0.045
Upper Garrison Ditch	0.045 – 0.060	0.050 – 0.055
Valley Creek	0.025 – 0.035	0.040
Weicher Creek	0.038 – 0.133	0.035 – 0.085
Weaver Run	0.045-0.060	0.055-0.080
Wet Woods Creek	0.045 – 0.055	0.050 – 0.075
Wilson Creek*	0.042 – 0.120	0.020 – 0.300

* Note: Mannings values reported include outliers adjusted to account for extreme obstruction of flow.

3.3 Vertical Datum

All FIS Reports 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 FIS report and FIRMs was the NGVD29. With the finalization of the NAVD88, many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

Effective information for this FIS report was converted from NGVD29 to NAVD88 based on data presented in Table 9. The average conversion of -0.487 foot was applied to convert all effective Base Flood Elevations (BFEs). Structure and ground elevations in the county must, therefore, be referenced to NAVD88. It is important to note that adjacent communities not presented in this FIS may be referenced to NGVD29. This may result in differences in BFEs across the corporate limits between communities.

TABLE 9 – Datum Conversion

Quad Name	Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88
New Albany	SE	38.25	-85.75	-0.486
Jeffersonville	SE	38.25	-85.625	-0.502
Anchorage	SE	38.25	-85.5	-0.495
Lanesville	SE	38.125	-85.875	-0.456
Louisville West	SE	38.125	-85.75	-0.482
Louisville East	SE	38.125	-85.625	-0.486
Jeffersontown	SE	38.125	-85.5	-0.505
Charlestown	SE	38.375	-85.625	-0.515

For more information on NAVD88, see the FEMA publication entitled *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (FEMA, 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).

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the DFIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and DFIRM for this community. Interested individuals may contact FEMA to access these data.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages the State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance flood elevations and delineations of the 1- and 0.2-percent-annual-chance floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. For the new detailed studies in this 2006 FIS, the 0.2-percent-annual-chance floodplain boundary has been replaced with a 1-percent-annual-chance floodplain representing fully developed conditions. This information is presented on the DFIRM and in many components of the FIS report, including Flood Profiles, Floodway Data Tables, and Summary of Stillwater Elevations Table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

In order to provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. In addition, the 1-percent-annual-chance flood representing fully developed conditions has been added. This floodplain has been used by MSD for planning and regulation purposes for years. For each stream studied by detailed methods, either the 1- and 0.2-percent-annual-chance floodplain boundaries, or the 1-percent-annual-chance existing conditions floodplain boundaries and 1-percent-annual-chance fully developed conditions floodplain boundaries, have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic data obtained from LOJIC, with a contour interval of 2 feet.

Either the 1- and 0.2-percent-annual-chance floodplain boundaries, or the 1-percent-annual-chance existing conditions floodplain boundaries and 1-percent-annual-chance fully developed conditions floodplain boundaries are shown on the DFIRMs (Exhibit 2). On these maps, the 1-percent-annual-chance floodplain boundary for existing conditions corresponds to the boundary of the areas of special flood hazards (Zones A and AE), the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of moderate flood hazards (Zone X), and the 1-percent-annual-chance floodplain boundary for fully developed conditions corresponds to future conditions hydrology (Zone X (Future Base Flood)). In cases where the 1- 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.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRMs (Exhibit 2).

Approximate 1-percent-annual-chance floodplain boundaries in some portions of the study area were taken directly from the 1994 FIRMs for Jefferson County, dated February 2, 1994 (Reference 1).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases 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. The floodways in this study 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.

The floodways for this 2006 FIS were either obtained directly from the 1994 FIS or were computed as part of the 2006 analyses for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations were tabulated for selected cross sections and are shown in Table 10, Floodway Data. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

Bee Lick Creek, Cooper Chapel Branch, Filson Fork, Little Bee Lick Creek, Long Run Creek, Manslick Branch, Mud Creek, and the lower portion of Wet Woods Creek were studied by limited detail analysis, either as part of the 1994 or 2006 study; therefore, as agreed to by FEMA, floodway analyses were not performed for these streams.

The floodways of Big Run Creek at the Paducah Louisville Railroad in the Upper Mill Creek watershed and Ponder Creek at Stonestreet Road in the Mill Creek watershed were based on preservation of valley storage in order to prevent a 10-percent increase in discharge or a 1-foot increase in the 1-percent-annual-chance profile.

There are many other locations where storage was incorporated to compute more accurate peak discharges while floodway limits were based on equal conveyance of overbank areas using the hydraulic models. In these cases, the areas of valley storage were fully developed so that loss of valley storage would require removal of buildings and filling, a process which is unlikely and is under the regulation of MSD's stormwater management program.

The elevations that were determined for Mill Creek and Upper Mill Creek are 429.0 and 435.0 feet NAVD88, respectively. Several years ago, the local sponsor at the time these elevations were determined, the Jefferson County government, was required to purchase these ponding areas to these elevations (in fee or easement) to limit any construction or filling. Ponding areas for Pond Creek were also purchased at this time. Therefore, these reaches are more restrictive than the floodway elevations and widths computed under normal procedures.

Along streams where floodways have not been computed, the community must make a reasonable effort 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 community.

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 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 in Figure 1.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
ANITA BRANCH								
A	70	242	1012	0.6	534.6	534.6	535.6	1.0
B	1720	79	118	5.1	557.1	557.1	557.1	0.0
C	4127	52	60	5.1	587.7	587.7	587.7	0.0
D	5921	58	77	4.0	609.2	609.2	609.2	0.0
E	6012	13	17	6.4	610.7	610.7	610.7	0.0
F	6099	8	31	3.5	614.1	614.1	614.5	0.4
G	6258	15	41	2.7	614.2	614.2	615.0	0.8

[1]Feet above confluence with Pennsylvania Run

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

ANITA BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
BEARGRASS CREEK								
A	0.792	139	1,683	5.8	432.5	432.5	432.5	0.0
B	0.856	180	1,800	5.4	432.9	432.9	432.9	0.0
C	0.981	107	1,375	7.0	433.3	433.3	433.3	0.0
D	1.039	116	1,575	6.1	436.0	436.0	436.0	0.0
E	1.116	152	1,541	6.3	436.2	436.2	436.2	0.0
F	1.180	186	2,392	4.0	437.2	437.2	437.2	0.0
G	1.238	106	1,180	8.2	436.8	436.8	436.8	0.0
H	1.359	123	1,482	6.5	437.9	437.9	437.9	0.0
I	1.465	106	1,320	7.3	438.2	438.2	438.2	0.0
J	1.578	134	2,103	4.6	441.7	441.7	441.7	0.0
SOUTH FORK BEARGRASS CREEK								
K	1.650	125	1,704	6.5	442.1	442.1	442.1	0.0
L	1.872	80	1,136	9.3	442.1	442.1	442.1	0.0
M	1.988	110	1,776	5.7	450.1	450.1	450.4	0.3
N	2.298	102	1,537	6.6	450.0	450.0	450.3	0.3
O	2.655	100	1,410	6.9	450.5	450.5	451.0	0.5
P	2.710	124	1,612	6.0	451.4	451.4	451.5	0.1
Q	3.002	65	962	9.1	451.5	451.5	452.0	0.5
R	3.113	90	1,341	6.5	452.3	452.3	452.6	0.3
S	3.276	75	1,070	7.8	452.7	452.7	453.1	0.4
T	3.478	55	939	8.2	453.6	453.6	453.6	0.0
U	3.660	40	761	10.1	453.8	453.8	453.8	0.0
V	3.719	70	1,109	7.0	455.8	455.8	455.9	0.1

[1]Miles above confluence with Ohio River

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BEARGRASS CREEK - SOUTH FORK BEARGRASS CREEK

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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 FORK BEARGRASS CREEK								
W	3.904	75	1,083	7.1	456.0	456.0	456.1	0.1
X	4.137	138	1,375	5.5	456.6	456.6	456.7	0.1
Y	4.259	201	1,566	4.6	457.8	457.8	458.5	0.7
Z	4.412	120	1,684	4.2	457.8	457.8	458.8	1.0
AA	4.592	264	3,177	2.3	458.4	458.4	459.3	0.9
AB	4.798	89	1,438	4.7	458.4	458.4	459.3	0.9
AC	5.039	67	1,260	5.4	459.0	459.0	459.8	0.8
AD	5.158	88	1,520	4.2	459.5	459.5	460.4	0.9
AE	5.351	117	1,414	4.5	459.8	459.8	460.6	0.8
AF	5.651	78	1,328	4.5	460.7	460.7	461.6	0.9
AG	5.975	42	648	6.9	461.4	461.4	462.3	0.9
AH	6.069	54	958	4.7	462.3	462.3	463.3	1.0
AI	6.356	390	3,324	1.3	463.1	463.1	464.1	1.0
AJ	6.622	109	1,455	3.1	463.1	463.1	464.1	1.0
AK	6.664	230	2,197	2.1	463.8	463.8	464.8	1.0
AL	6.969	392	3,157	1.5	464.1	464.1	465.1	1.0
AM	7.290	212	1,751	2.6	464.4	464.4	465.3	0.9
AN	7.356	134	1,172	3.9	465.3	465.3	466.0	0.7
AO	7.474	137	1,201	3.8	465.8	465.8	466.4	0.6
AP	7.676	136	1,320	3.4	466.4	466.4	467.2	0.8
AQ	7.932	60	686	6.6	466.8	466.8	467.5	0.7
AR	7.986	142	1,438	3.1	468.8	468.8	469.4	0.6
AS	8.178	71	929	4.9	468.9	468.9	469.6	0.7
AT	8.345	76	897	4.5	469.3	469.3	470.0	0.7

[1]Miles above confluence with Ohio River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BEARGRASS CREEK - SOUTH FORK BEARGRASS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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 FORK BEARGRASS CREEK								
AU	8.384	64	788	5.2	469.8	469.8	470.4	0.6
AV	8.765	79	937	4.4	471.0	471.0	471.7	0.7
AW	9.045	215	1,259	3.0	472.1	472.1	473.0	0.9
AX	9.317	117	1,141	2.5	472.8	472.8	473.6	0.8
AY	9.694	95	859	3.8	473.1	473.1	473.9	0.8
AZ	9.786	124	891	3.6	474.8	474.8	475.4	0.6
BA	9.952	64	452	7.2	474.8	474.8	475.6	0.8
BB	10.026	130	805	4.0	479.6	479.6	479.7	0.1
BC	10.159	100	614	5.3	480.2	480.2	480.5	0.3
BD	10.376	70	466	7.6	482.2	482.2	482.3	0.1
BE	10.412	125	1,039	3.4	484.0	484.0	484.5	0.5
BF	10.580	50	394	7.2	484.4	484.4	484.6	0.2
BG	10.745	40	354	5.9	486.0	486.0	486.6	0.6
BH	10.783	45	421	4.6	487.5	487.5	488.4	0.9
BI	11.076	65	400	4.5	489.4	489.4	490.1	0.7
BJ	11.200	46	317	5.5	490.5	490.5	491.1	0.6
BK	11.244	40	309	5.6	492.1	492.1	492.1	0.0
BL	11.342	47	253	7.1	493.2	493.2	493.2	0.0
BM	11.386	75	392	4.6	496.4	496.4	496.6	0.2
BN	11.443	85	427	4.2	496.8	496.8	497.0	0.2
BO	11.503	108	474	3.8	498.3	498.3	498.6	0.3
BP	11.714	80	294	6.1	499.4	499.4	499.5	0.1
BQ	11.742	45	280	6.4	501.0	501.0	501.0	0.0
BR	11.985	45	281	6.4	504.5	504.5	504.9	0.4

[1] Miles above confluence with Ohio River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BEARGRASS CREEK - SOUTH FORK BEARGRASS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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 FORK BEARGRASS CREEK								
BS	12.018	143	679	2.6	506.3	506.3	507.0	0.7
BT	12.176	50	315	5.7	507.8	507.8	508.4	0.7
BU	12.289	128	721	2.2	510.9	510.9	511.7	0.8
BV	12.461	117	1,141	2.5	472.8	472.8	473.6	0.8
BW	12.795	50	201	5.6	519.4	519.4	519.6	0.2
BX	12.857	35	219	4.1	522.0	522.0	522.0	0.0
BY	13.047	32	112	6.0	523.4	523.4	524.4	1.0
BZ	13.241	27	118	3.7	530.4	530.4	530.4	0.0
CA	13.362	18	67	3.1	531.8	531.8	532.6	0.8
CB	13.414	22	63	3.4	533.3	533.3	533.7	0.4
CC	13.445	543	9,122	0.2	563.7	563.7	563.7	0.0
CD	14.012	47	301	6.3	563.9	563.9	564.8	0.9
CE	14.109	27	176	10.8	570.5	570.5	571.4	0.9
CF	14.139	9	104	19.0	576.3	576.3	576.3	0.0
CG	14.193	222	4,434	0.4	601.3	601.3	601.3	0.0
CH	14.451	103	572	2.8	601.3	601.3	602.2	0.9
CI	14.605	168	230	6.4	609.4	609.4	609.4	0.0
CJ	14.628	102	383	3.5	621.7	621.7	621.7	0.0
CK	14.675	129	606	2.2	625.4	625.4	625.4	0.0
CL	14.781	74	284	4.3	626.6	626.6	626.6	0.0
CM	14.825	124	775	1.6	634.4	634.4	634.4	0.0
CN	14.850	111	453	2.7	634.5	634.5	634.5	0.0

[1]Miles above confluence with Ohio River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BEARGRASS CREEK - SOUTH FORK BEARGRASS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
BIG RUN CREEK								
A	2.45	63	422	3.1	459.5	459.5	459.5	0.0
B	2.70	128	482	5.8	462.1	462.1	462.1	0.0
C	2.99	79	369	7.5	464.8	464.8	464.8	0.0
D	3.28	69	550	5.1	469.6	469.6	470.1	0.5
E	3.80	57	275	9.5	474.6	474.6	475.0	0.4
F	3.90	162	723	2.9	476.7	476.7	477.5	0.8
G	4.30	99	343	5.2	481.2	481.2	481.8	0.6
H	4.49	172	882	1.6	486.0	486.0	487.0	1.0
BIG RUN DITCH								
A	0.30	62	331	3.9	442.1	440.5[2]	441.0	0.5
B	0.56	51	351	3.5	442.9	442.9	443.8	0.9
C	0.75	58	489	2.5	445.3	445.3	446.1	0.8
D	1.00	45	347	2.6	447.5	447.5	448.3	0.8
E	1.29	38	266	1.2	449.6	449.6	450.4	0.8
F	1.50	54	272	0.9	449.7	449.7	450.5	0.8
BIG RUN DIVERSION								
A	0.20	49	284	5.6	442.2	442.2	442.2	0.0
B	1.40	54	362	4.1	448.7	448.7	448.9	0.2

[1] Miles above mouth
[2] Elevations without considering backwater effect from Upper Mill Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BIG RUN CREEK - BIG RUN DITCH - BIG RUN DIVERSION

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
BLACK POND CREEK								
A	0.10	56	343	3.6	432.8	426.0 [2]	427.0	1.0
B	0.20	54	319	3.8	432.8	426.6 [2]	427.4	0.8
C	0.67	57	365	3.3	432.8	428.7 [2]	429.1	0.4
D	1.30	57	409	2.7	432.8	430.5 [2]	430.7	0.2
E	1.60	55	281	3.9	435.9	435.9	435.9	0.0
F	2.38	43	239	1.6	439.8	439.8	439.9	0.1
G	2.80	47	266	1.4	441.3	441.3	441.3	0.0
H	3.40	29	165	1.9	442.3	442.2	442.3	0.1
I	3.97	19	100	2.7	446.9	446.9	447.3	0.4
BLUE SPRINGS DITCH								
A	0.044	50	513	2.3	460.1	460.1	460.8	0.7
B	0.064	60	594	2.0	460.4	460.4	461.3	0.9
C	0.196	93	643	1.8	460.7	460.7	461.6	0.9
D	0.604	66	479	2.4	461.3	461.3	462.1	0.8
E	0.925	57	354	3.3	462.4	462.4	462.9	0.5
F	0.964	71	518	2.3	463.2	463.2	463.7	0.5
G	1.077	58	344	2.7	463.6	463.6	464.1	0.5
H	1.194	60	355	2.1	464.9	464.9	465.3	0.4
I	1.373	83	335	2.3	465.6	465.6	466.0	0.4
J	1.610	39	211	4.1	466.9	466.9	467.1	0.2
K	1.727	45	197	4.4	468.3	468.3	468.6	0.3
L	1.829	38	229	1.1	469.8	469.8	470.0	0.2
M	1.993	40	187	1.3	469.9	469.9	470.1	0.2

[1]Miles above mouth
[2] Elevations without considering backwater effect from Mill Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BLACK POND CREEK - BLUE SPRINGS DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
BOXWOOD DITCH								
A	0.23	50	367	2.1	439.1	437.4[2]	438.0	0.6
B	0.50	34	292	2.7	439.1	437.9[2]	438.4	0.5
C	0.81	34	278	1.7	439.1	438.5[2]	439.3	0.8
D	1.30	36	218	1.7	439.1	438.8[2]	439.7	0.9
BROOKLAWN TRIBUTARY								
A	0.19	94	731	1.9	471.4	471.4	472.3	0.9
B	0.23	169	1,160	1.2	471.5	471.5	472.4	0.9
C	0.34	206	1,013	1.4	471.5	471.5	472.4	0.9
D	0.48	59	751	1.9	471.9	471.9	472.7	0.8
E	0.64	39	255	5.5	475.6	475.6	476.5	0.9
F	0.67	44	288	4.9	477.0	477.0	478.0	1.0
G	0.69	50	289	4.9	477.1	477.1	478.1	1.0
H	0.75	62	357	2.8	478.2	478.2	479.2	1.0
I	0.81	77	364	2.7	478.4	478.4	479.4	1.0
J	0.92	76	140	6.6	479.8	479.8	480.7	0.9
K	0.99	33	113	7.7	481.7	481.7	482.4	0.7
L	1.05	33	142	5.9	483.6	483.6	483.7	0.1
M	1.14	76	299	2.6	486.1	486.1	486.3	0.2
N	1.23	31	86	9.2	489.2	489.2	489.2	0.0
O	1.28	37	126	6.3	490.1	490.1	490.1	0.0

[1]Miles above mouth
[2]Elevations without considering overflow effect from Upper Mill Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BOXWOOD DITCH - BROOKLAWN TRIBUTARY

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
BROWNSBORO DITCH								
A	0.004	90	893	0.2	582.7	582.7	583.7	1.0
B	0.031	52	326	0.6	582.7	582.7	583.7	1.0
C	0.035	52	301	0.7	582.7	582.7	583.7	1.0
D	0.046	36	149	1.3	582.7	582.7	583.7	1.0

[1]Miles above confluence with Little Goose Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY AND INCORPORATED AREAS

FLOODWAY DATA

BROWNSBORO DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
BRUSH RUN UPPER								
A	75	47	331	9.0	596.5	583.7[2]	584.7	1.0
B	481	202	914	2.9	596.5	587.1[2]	588.0	0.9
C	783	69	367	7.3	596.5	587.4[2]	588.1	0.7
D	976	130	435	9.3	596.5	588.2[2]	589.2	1.0
E	1,275	66	963	2.8	600.2	600.2	601.1	0.9
F	2,518	216	1688	1.6	600.4	600.4	601.3	0.9
G	3,787	86	597	4.5	600.5	600.5	601.3	0.8
H	4,540	60	300	9.0	601.9	601.9	602.8	0.9
I	5,001	176	910	3.0	604.9	604.9	605.6	0.7
J	5,435	107	559	3.9	607.3	607.3	608.3	1.0
K	5,853	62	389	5.6	610.0	610.0	610.3	0.3
L	6,128	56	242	9.1	610.8	610.8	611.3	0.5
M	6,557	76	372	5.9	614.9	614.9	615.0	0.1
N	7,146	53	259	5.9	617.4	617.4	617.8	0.4
O	8,951	45	190	8.1	628.4	628.4	628.7	0.3
P	9,660	49	286	5.4	632.4	632.4	633.3	1.0
Q	10,480	57	285	4.2	635.2	635.2	636.2	1.0
R	11,663	83	304	3.9	640.7	640.7	640.9	0.2
S	12,675	71	238	3.0	645.6	645.6	646.1	0.5
T	14,082	39	145	4.9	652.3	652.3	652.3	0.0
U	14,402	180	352	2.4	654.1	654.1	654.1	0.0
V	14,768	43	261	2.7	655.3	655.3	655.6	0.3

[1]Miles above confluence with Floyds Fork
[2]Elevations without considering overflow effect from Floyds Fork

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BRUSH RUN UPPER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
BUECHEL BRANCH								
A	0.11	63	487	5.4	472.8	470.5[2]	471.5	1.0
B	0.21	71	547	5.0	472.8	471.5[2]	472.5	1.0
C	0.46	190	1,250	2.2	476.0	476.0	476.1	0.1
D	0.63	356	1,339	2.0	476.3	476.3	476.6	0.3
E	0.80	281	618	4.4	477.0	477.0	477.2	0.2
F	1.02	156	871	3.0	482.2	482.2	482.5	0.3
G	1.31	142	1,175	2.2	486.7	486.7	487.5	0.8
H	1.40	191	1,024	2.6	488.6	488.6	489.4	0.8
I	1.94	96	355	4.1	495.0	495.0	496.0	1.0
CANE RUN DITCH								
A	0.26	34	199	2.3	438.6	435.0[3]	435.8	0.8
B	0.68	50	254	1.6	438.6	436.6[3]	437.0	0.4
C	1.01	39	181	2.0	438.6	437.4[3]	437.7	0.3
D	1.50	48	220	1.4	438.6	438.6	438.8	0.2
E	1.79	46	214	1.3	439.6	439.6	439.9	0.3
F	2.07	40	163	1.5	439.9	439.9	440.2	0.3

[1] Miles above mouth
[2] Elevations without considering backwater effect from South Fork Beargrass Creek
[3] Elevations without considering backwater effect from Upper Mill Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

BUECHEL BRANCH - CANE RUN DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
DREWS FORK								
A	55	14	66	4.0	599.9	599.9	600.5	0.6
B	703	20	35	7.6	611.5	611.5	611.6	0.1
C	1,353	25	53	4.9	620.8	620.8	621.8	1.0
D	1,644	31	69	3.3	623.2	623.2	623.8	0.6
E	1,696	37	91	2.5	624.6	624.6	624.7	0.1
F	1,924	25	34	6.7	628.7	628.7	628.7	0.0
DURBIN BRANCH								
A	102	46	137	1.6	595.2	595.2	596.2	1.0
B	799	27	34	6.5	602.2	602.2	602.2	0.0
C	1,179	37	38	5.7	615.3	615.3	615.3	0.0
D	1,832	20	34	6.5	628.0	628.0	628.9	0.9
E	2,005	16	34	4.2	631.0	631.0	631.6	0.6
F	2,055	27	72	2.0	632.7	632.7	632.7	0.0
G	2,150	45	79	1.8	632.8	632.8	632.9	0.1

[1]Feet above mouth

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

DREWS FORK - DURBIN BRANCH

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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 BRANCH BOXWOOD DITCH								
A	0.09	24	76	4.8	439.1	434.9[2]	435.6	0.7
B	0.33	36	138	2.6	440.0	440.1	440.3	0.2
C	0.84	38	164	2.0	441.8	441.8	442.2	0.4
D	1.13	44	196	1.5	442.4	442.4	442.8	0.4
FERN CREEK								
A	0.15	111	1,054	3.8	479.3	479.3	480.2	0.9
B	0.31	149	926	4.4	482.8	482.8	483.0	0.2
C	0.74	80	894	4.2	490.0	490.0	490.7	0.7
D	1.18	114	1,014	3.7	492.2	492.2	493.1	0.9
E	1.44	63	635	5.4	496.8	496.8	497.8	1.0

[1]Miles above mouth
[2]Elevations without considering overflow effect from Upper Mill Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY AND INCORPORATED AREAS

FLOODWAY DATA

EAST BRANCH BOXWOOD DITCH - FERN CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
FISHPOOL CREEK								
A	0.210	69	565	3.0	462.0	462.0	462.9	0.9
B	0.629	75	598	2.7	462.9	462.9	463.7	0.8
C	0.888	58	442	3.7	463.7	463.7	464.3	0.6
D	0.912	62	446	3.8	465.9	465.9	466.1	0.2
E	1.294	54	364	4.9	467.4	467.4	467.5	0.1
F	1.744	50	253	5.2	471.1	471.1	471.1	0.0
G	1.960	56	397	3.3	475.8	475.8	475.8	0.0
H	2.063	40	146	1.0	477.4	477.4	477.5	0.1
I	2.189	67	472	4.3	483.7	483.7	484.5	0.8
J	2.366	85	637	3.2	483.7	483.7	484.7	1.0
K	2.508	180	1,733	1.0	487.6	487.6	488.6	1.0
L	2.929	139	566	3.6	488.4	488.4	489.4	1.0
M	2.989	47	160	7.3	490.2	490.2	490.6	0.4
N	3.017	56	296	3.8	493.6	493.6	493.6	0.0
O	3.140	48	192	7.1	496.1	496.1	496.4	0.3
P	3.494	47	155	8.3	510.3	510.3	510.3	0.0
Q	3.776	41	235	14.3	525.6	525.6	525.6	0.0
R	3.818	45	624	1.9	536.5	536.5	537.4	0.9
S	3.883	63	787	1.0	538.6	538.6	539.6	1.0
T	4.102	63	134	8.3	539.4	539.4	539.4	0.0
U	4.382	25	80	8.2	555.8	555.8	555.8	0.0
V	4.409	41	378	1.7	564.0	564.0	565.0	1.0
W	4.566	50	81	7.2	565.7	565.7	565.7	0.0
X	4.747	53	97	4.7	575.5	575.5	575.6	0.1
Y	4.819	42	98	4.7	578.6	578.6	578.7	0.1
Z	4.829	76	268	2.2	581.7	581.7	582.0	0.3

[1]Miles above confluence with Southern Ditch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FISHPOOL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
FISHPOOL CREEK								
AA	4.860	47	132	3.5	581.8	581.8	582.0	0.2
AB	5.201	17	38	7.0	593.8	593.8	593.8	0.0

[1]Miles above confluence with Southern Ditch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FISHPOOL CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
FLOYDS FORK								
A	13.88	440	11,075	3.8	477.1	477.1	478.1	1.0
B	14.69	520	12,083	3.5	479.1	479.1	480.1	1.0
C	15.50	500	11,658	3.6	480.8	480.8	481.8	1.0
D	16.77	550	11,683	3.6	483.3	483.3	484.3	1.0
E	17.80	770	15,038	2.8	485.0	485.0	486.0	1.0
F	18.61	830	13,699	2.9	486.1	486.1	487.1	1.0
G	18.74	850	14,050	2.8	486.9	486.9	487.8	0.9
H	19.35	610	8,918	4.5	488.2	488.2	489.1	0.9
I	20.43	740	9,613	4.1	491.9	491.9	492.8	0.9
J	21.05	1,170	14,034	2.8	493.2	493.2	494.1	0.9
K	21.60	280	4,719	8.4	494.4	494.4	495.3	0.9
L	22.56	1,100	11,509	3.5	499.1	499.1	500.1	1.0
M	23.28	650	7,121	5.6	501.7	501.7	502.7	1.0
N	23.78	1,200	12,253	3.2	504.4	504.4	505.4	1.0
O	24.41	850	8,869	4.4	506.9	506.9	507.8	0.9
P	24.50	770	8,010	4.8	507.5	507.5	508.5	1.0
Q	25.39	1,110	11,143	3.5	513.4	513.4	514.5	1.1
R	26.22	600	6,435	6.0	519.4	519.4	520.3	0.9
S	26.74	1,000	9,987	3.9	523.3	523.3	524.2	0.9
T	27.50	685	7,333	4.7	527.8	527.8	528.8	1.0
U	28.03	1,350	11,941	2.9	530.8	530.8	531.8	1.0
V	28.58	570	5,061	6.9	533.4	533.4	534.3	0.9
W	29.29	740	7,114	4.9	539.1	539.1	540.1	1.0
X	30.00	950	8,524	4.1	543.0	543.0	544.0	1.0
Y	30.82	820	7,673	4.5	547.4	547.4	548.4	1.0
Z	31.40	650	5,748	6.1	551.2	551.2	552.2	1.0

[1] Miles above confluence with Salt River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOYDS FORK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
FLOYDS FORK								
AA	31.80	630	6,204	5.6	553.7	553.7	554.7	1.0
AB	31.87	389	4,713	7.4	554.2	554.2	555.2	1.0
AC	31.89	390	5,106	6.8	555.4	555.4	556.2	0.8
AD	32.20	850	8,954	3.9	557.8	557.8	558.4	0.6
AE	32.50	450	4,410	7.9	558.3	558.3	559.2	0.9
AF	32.90	480	7,687	5.7	563.3	563.3	564.2	0.9
AG	33.07	775	12,598	2.8	567.4	567.4	568.1	0.7
AH	33.74	800	10,219	2.7	568.1	568.1	568.9	0.8
AI	34.82	1,380	7,689	3.6	570.9	570.9	571.9	1.0
AJ	34.95	1,000	6,335	4.4	571.7	571.7	572.6	0.9
AK	36.10	590	4,765	5.9	579.5	579.5	580.3	0.8
AL	36.70	440	4,511	6.2	584.5	584.5	585.3	0.8
AM	36.87	550	5,553	5.0	586.9	586.9	587.6	0.7
AN	37.95	310	3,683	7.6	591.9	591.9	592.7	0.8
AO	38.61	470	5,749	4.9	595.7	595.7	596.7	1.0
AP	38.72	480	5,066	5.5	597.2	597.2	598.2	1.0
AQ	39.56	417	5,053	5.5	600.4	600.4	601.2	0.8
AR	40.50	830	9,296	2.7	603.7	603.7	604.1	0.4
AS	40.65	730	9,757	2.6	607.9	607.9	608.0	0.1
AT	41.65	320	3,602	7.1	609.4	609.4	609.4	0.0
AU	42.50	330	3,852	6.6	615.1	615.1	615.9	0.8
AV	43.13	200	3,618	8.2	619.2	619.2	620.2	1.0
AW	43.42	250	3,802	6.7	621.5	621.5	622.2	0.7
AX	44.50	210	3,781	6.7	625.4	625.4	626.2	0.8
AY	45.16	320	4,931	5.2	627.5	627.5	628.4	0.9

[1]Miles above confluence with Salt River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

FLOYDS FORK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
GENE SNYDER TRIBUTARY								
A	460	8	30	10.9	595.0	595.0	596.0	1.0
B	907	35	92	3.6	599.9	599.9	600.9	1.0
C	1,254	37	238	1.3	607.8	607.8	607.8	0.0
D	1,390	20	73	4.4	607.8	607.8	607.8	0.0

[1]Feet above confluence with Pennsylvania Run

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

GENE SNYDER TRIBUTARY

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
GOOSE CREEK								
A	0.006	376	2,281	0.8	660.9	660.9	661.9	1.0
B	0.268	228	1,280	1.4	661.0	661.0	661.9	0.9
C	0.583	84	317	5.5	665.2	665.2	666.2	1.0
D	0.675	140	285	9.9	667.3	667.3	667.4	0.1
E	0.692	163	873	1.5	671.1	671.1	671.8	0.7
F	0.817	177	393	3.4	671.6	671.6	672.5	0.9
G	0.829	216	1,001	1.3	673.9	673.9	674.9	1.0
H	0.903	86	493	2.7	674.4	674.4	675.2	0.8
I	0.972	135	368	3.5	676.0	676.0	676.9	0.9
J	1.039	86	262	4.9	678.7	678.7	679.2	0.5
K	1.089	58	130	7.7	680.5	680.5	681.3	0.8
L	1.173	95	325	3.1	684.7	684.7	685.0	0.3
M	1.258	28	108	9.3	687.2	687.2	687.5	0.3
N	1.372	95	240	3.4	690.5	690.5	691.5	1.0
O	1.455	37	69	11.7	693.4	693.4	693.7	0.3
P	1.477	56	139	5.4	696.7	696.7	697.2	0.5
Q	1.532	101	305	2.5	698.7	698.7	699.7	1.0
R	1.572	20	112	6.7	701.8	701.8	702.8	1.0
S	1.658	71	234	3.2	702.6	702.6	703.4	0.8
T	1.679	43	141	5.3	704.1	704.1	705.1	1.0
U	1.739	36	96	5.0	705.2	705.2	705.9	0.7
V	1.756	30	102	4.7	706.2	706.2	706.4	0.2
W	1.801	43	117	4.1	707.0	707.0	707.3	0.3

[1]Miles above Lakeland Road

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

GOOSE CREEK

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
GREASY DITCH								
A	0.08	86	730	4.6	457.5	455.0[2]	455.8	0.8
B	0.46	82	801	4.2	457.7	457.7	458.5	0.8
C	0.52	76	640	4.9	457.8	457.8	458.7	0.9
D	0.70	94	717	3.7	459.0	459.0	459.9	0.9
E	0.90	370	1,909	1.3	459.5	459.5	460.4	0.9
F	1.40	56	436	2.6	460.4	460.4	461.3	0.9
G	1.70	58	416	2.3	461.3	461.3	462.2	0.9
H	1.90	49	271	3.1	462.1	462.1	462.8	0.7
I	2.12	47	208	3.6	464.5	464.5	464.6	0.1
J	2.44	39	149	3.9	467.8	467.8	467.8	0.0

[1] Miles above confluence with Northern Ditch

[2] Elevations without considering overflow effect from Northern Ditch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

GREASY DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY[2]	WITH FLOODWAY	INCREASE
HARRODS CREEK								
A	0.228	138	2,265	11.1	451.5	424.8	425.8	1.0
B	0.323	155	2,522	10.0	451.5	425.9	426.8	0.9
C	0.418	153	2,216	11.4	451.5	426.3	426.9	0.6
D	0.568	176	2,832	8.9	451.5	427.9	428.8	0.9
E	0.663	126	2,231	11.3	451.5	427.9	428.8	0.9
F	0.720	162	2,753	9.2	451.5	429.0	429.9	0.9
G	0.765	141	2,397	10.5	451.5	429.3	430.1	0.8
H	0.955	133	2,281	11.0	451.5	430.3	431.1	0.8
I	1.049	162	3,052	8.3	451.5	431.7	432.5	0.8
J	1.146	153	3,275	7.7	451.5	432.3	433.0	0.7
K	1.239	125	2,770	9.1	451.5	432.3	433.0	0.7
L	1.333	215	3,744	6.7	451.5	433.0	433.7	0.7
M	1.409	140	3,355	7.5	451.5	433.1	433.8	0.7
N	1.504	128	3,358	7.5	451.5	433.3	434.1	0.8
O	1.648	155	3,537	7.1	451.5	433.7	434.4	0.7
P	1.742	155	3,347	7.7	451.5	433.7	434.5	0.8
Q	1.837	128	2,989	8.6	451.5	433.8	434.6	0.8
R	1.894	125	2,981	8.6	451.5	433.9	434.7	0.8
S	1.989	161	3,304	7.8	451.5	434.3	435.2	0.9
T	2.083	123	2,956	8.7	451.5	434.4	435.3	0.9
U	2.178	208	3,155	8.1	451.5	434.6	435.4	0.8
V	2.273	165	3,402	7.6	451.5	435.4	436.4	1.0
W	2.461	265	4,573	5.6	451.5	436.0	437.0	1.0
X	2.556	414	5,504	4.7	451.5	436.3	437.3	1.0
Y	2.622	228	3,981	6.5	451.5	436.3	437.3	1.0
Z	2.724	155	3,229	8.0	451.5	436.3	437.3	1.0

[1] Miles above confluence with Ohio River

[2] Elevation computed without consideration of backwater effects from Ohio River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

HARRODS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY[2]	WITH FLOODWAY	INCREASE
HARRODS CREEK								
AA	2.800	204	3,893	6.6	451.5	436.8	437.8	1.0
AB	2.895	250	4,224	6.1	451.5	437.0	438.0	1.0
AC	2.989	253	4,392	5.9	451.5	437.2	438.2	1.0
AD	3.084	212	4,340	5.9	451.5	437.6	438.6	1.0
AE	3.171	355	5,358	4.8	451.5	437.7	438.7	1.0
AF	3.270	351	5,331	4.8	451.5	437.9	438.9	1.0
AG	3.364	258	4,110	6.3	451.5	437.9	438.9	1.0
AH	3.459	224	3,547	7.2	451.5	438.0	439.0	1.0
AI	3.516	172	3,235	7.9	451.5	438.1	439.1	1.0
AJ	3.611	303	4,350	5.9	451.5	439.1	440.1	1.0
AK	3.851	240	4,057	6.3	451.5	440.3	441.2	0.9
AL	3.897	183	3,371	7.6	451.5	440.3	441.2	0.9
AM	4.086	268	4,054	6.3	451.5	441.6	442.5	0.9
AN	4.275	245	4,381	5.9	451.5	442.6	443.5	0.9
AO	4.370	285	4,306	6.0	451.5	443.0	443.8	0.8
AP	4.465	275	4,264	6.0	451.5	443.3	444.2	0.9
AQ	4.654	203	3,797	6.8	451.5	444.1	445.0	0.9
AR	4.843	190	3,406	7.5	451.5	445.0	445.9	0.9
AS	5.033	256	4,493	5.7	451.5	446.3	447.3	1.0
AT	5.222	375	5,888	4.4	451.5	447.2	448.1	0.9
AU	5.374	197	4,109	6.3	451.5	447.4	448.4	1.0
AV	5.563	281	4,894	5.3	451.5	448.2	449.2	1.0
AW	5.752	477	6,224	4.1	451.5	449.0	449.9	0.9

[1] Miles above confluence with Ohio River
[2] Elevation computed without consideration of backwater effects from Ohio River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

HARRODS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
HITE CREEK								
A	7,027	64	277	8.1	598.6	598.6	598.6	0.0
B	7,652	45	226	9.3	608.6	608.6	608.9	0.3
C	8,342	79	430	4.9	613.5	613.5	614.4	0.8
D	8,879	89	613	3.4	616.7	616.7	617.7	1.0
E	9,196	127	768	2.7	617.5	617.5	618.3	0.8
F	9,820	72	460	4.5	620.2	620.2	621.0	0.8
G	10,563	85	520	3.9	623.4	623.4	624.2	0.8
H	10,944	61	457	4.5	625.7	625.7	626.5	0.8
I	11,203	89	737	2.8	626.4	626.4	627.3	0.9
J	11,583	90	1,201	1.7	633.7	633.7	634.6	0.9
K	12,405	123	1,128	2.3	633.8	633.8	634.8	1.0
L	13,459	130	796	3.1	635.1	635.1	636.1	1.0
M	13,770	219	1,565	1.9	640.5	640.5	640.5	0.0
N	14,584	93	572	3.5	641.3	641.3	641.7	0.4
O	15,351	28	199	10.1	643.4	643.4	644.4	1.0
P	15,599	60	446	4.5	646.2	646.2	646.4	0.2
Q	16,250	100	448	4.5	648.1	648.1	649.0	0.9
R	16,969	155	996	2.0	652.1	652.1	652.8	0.7
S	18,088	139	435	3.6	653.9	653.9	654.4	0.5
T	19,579	52	263	5.9	661.5	661.5	662.2	0.7
U	20,524	70	380	4.1	666.1	666.1	667.0	0.9
V	21,069	76	203	5.0	669.7	669.7	670.1	0.4
W	21,417	52	208	4.9	673.2	673.2	673.9	0.7
X	21,854	50	225	4.5	675.9	675.9	676.6	0.7
Y	22,319	58	138	7.4	678.2	678.2	678.4	0.2
Z	22,704	58	221	4.4	682.4	682.4	683.1	0.7

[1]Feet above confluence with South Fork (in Oldham County)

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

HITE CREEK

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
HITE CREEK								
AA	22,999	31	146	6.6	693.4	693.4	694.4	1.0
AB	23,087	34	319	3.0	693.4	693.4	694.4	1.0
AC	25,133	118	323	2.8	694.4	694.4	695.1	0.7
AD	25,576	108	572	1.6	702.3	702.3	702.3	0.0
AE	26,393	51	149	5.2	706.1	706.1	706.1	0.0
AF	27,047	47	252	3.1	712.2	712.2	712.2	0.0
AG	27,964	45	181	3.9	713.0	713.0	713.8	0.8
AH	28,418	163	1,210	0.4	718.3	718.3	719.3	1.0
AI	29,305	76	108	2.8	720.2	720.2	720.3	0.1
AJ	29,612	25	66	4.6	723.1	723.1	723.4	0.3
AK	30,049	42	193	1.8	729.9	729.9	729.9	0.0
AL	30,254	27	235	1.2	733.7	733.7	733.7	0.0
AM	30,589	27	137	0.8	733.7	733.7	733.8	0.1

[1]Feet above confluence with South Fork (in Oldham County)

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

HITE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
LEFORES BRANCH								
A	0.087	17	49	8.4	668.2	668.2	668.9	0.7
B	0.216	21	64	5.8	676.8	676.8	677.8	1.0
LILAC RUN								
A	0.036	47	197	2.1	627.9	627.9	628.9	1.0
B	0.056	13	41	10.0	629.3	629.3	629.6	0.3
C	0.077	29	69	5.9	632.5	632.5	633.3	0.8
D	0.094	29	238	1.7	639.1	639.1	640.0	0.9
E	0.179	24	91	3.9	639.2	639.2	640.2	1.0
F	0.189	25	96	3.7	639.5	639.5	640.5	1.0
G	0.202	25	165	2.1	645.1	645.1	646.0	0.9
H	0.232	50	220	1.6	645.2	645.2	646.2	1.0
I	0.241	50	247	1.4	647.3	647.3	648.0	0.7
J	0.260	38	185	1.9	647.4	647.4	648.1	0.7
K	0.292	18	58	6.1	647.4	647.4	648.1	0.7
L	0.340	20	60	5.9	652.6	652.6	652.6	0.0
M	0.349	20	43	8.3	653.7	653.7	653.7	0.0
N	0.368	28	398	0.9	667.1	667.1	668.1	1.0
O	0.423	104	949	0.4	667.2	667.2	668.2	1.0

[1]Miles above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

LEFORES BRANCH - LILAC RUN

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
LITTLE GOOSE CREEK								
A	4.813	55	288	6.9	547.8	547.8	548.8	1.0
B	4.892	59	332	5.8	550.7	550.7	551.7	1.0
C	4.976	59	1,009	1.9	564.5	564.5	565.3	0.8
D	5.191	109	1,047	2.6	564.7	564.7	565.6	0.9
E	5.324	105	746	3.6	565.4	565.4	566.3	0.9
F	5.391	117	677	3.7	566.1	566.1	567.1	1.0
G	5.684	130	758	3.3	571.9	571.9	572.9	1.0
H	5.890	61	391	6.2	575.7	575.7	576.7	1.0
I	5.926	181	1,957	1.2	581.9	581.9	582.9	1.0
J	6.026	226	1,930	1.3	582.0	582.0	583.0	1.0
K	6.063	241	1,936	1.2	582.7	582.7	583.7	1.0
L	6.160	191	1,361	1.7	582.7	582.7	583.7	1.0
M	6.276	114	718	3.1	583.0	583.0	584.0	1.0
N	6.466	78	468	4.8	584.1	584.1	585.0	0.9
O	6.600	140	449	5.0	585.7	585.7	586.4	0.7
P	6.611	140	617	3.6	586.4	586.4	587.4	1.0
Q	6.667	131	771	1.9	588.4	588.4	589.3	0.9
R	6.813	223	1,026	1.4	588.9	588.9	589.9	1.0
S	6.838	173	945	1.0	590.0	590.0	590.9	0.9
T	6.927	62	267	3.5	590.2	590.2	591.1	0.9
U	7.051	38	169	5.5	592.1	592.1	592.9	0.8
V	7.171	27	133	7.0	596.4	596.4	597.3	0.9
W	7.210	28	100	9.3	599.2	599.2	599.6	0.4
X	7.220	35	187	5.0	600.5	600.5	601.5	1.0
Y	7.316	35	261	3.5	609.0	609.0	609.8	0.8
Z	7.340	66	429	1.9	609.1	609.1	610.1	1.0

[1]Miles above confluence with Goose Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE GOOSE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
LITTLE GOOSE CREEK								
AA	7.499	21	76	10.8	611.7	611.7	611.8	0.1
AB	7.596	46	207	3.9	616.9	616.9	617.9	1.0
AC	7.731	20	91	9.0	621.4	621.4	622.3	0.9
AD	7.818	79	385	1.4	627.9	627.9	628.5	0.6
AE	7.895	82	171	3.3	628.2	628.2	628.9	0.7
AF	7.934	31	99	5.6	629.7	629.7	630.7	1.0
AG	7.971	173	2,027	0.3	643.1	643.1	644.0	0.9
AH	8.182	41	312	3.5	643.1	643.1	643.9	0.8
AI	8.240	41	337	2.3	645.5	645.5	646.4	0.9
AJ	8.334	64	287	2.2	645.7	645.7	646.7	1.0
AK	8.388	25	69	9.4	647.1	647.1	647.1	0.0
AL	8.440	45	308	2.1	651.5	651.5	651.5	0.0
AM	8.463	26	71	9.1	651.3	651.3	652.3	1.0

[1]Miles above confluence with Goose Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

LITTLE GOOSE CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
LONG RUN CREEK								
A	0.05	217	1,633	6.5	568.7	561.6[2]	562.6	1.0
B	0.60	260	1,541	6.9	568.7	568.2[2]	568.8	0.6
C	1.38	410	2,216	4.8	578.1	578.1	578.5	0.4
D	2.07	196	1,359	7.2	587.5	587.5	588.5	1.0
E	2.86	209	1,878	5.1	601.3	601.3	602.0	0.7
F	3.38	247	1,311	4.9	606.9	606.9	607.9	1.0
G	3.88	302	2,070	3.1	613.4	613.4	614.3	0.9
H	4.12	178	1,464	4.4	618.6	618.6	619.5	0.9
I	4.83	138	1,098	5.6	624.9	624.9	625.9	1.0
J	5.25	421	3,631	1.7	635.9	635.9	636.0	0.1
K	5.62	251	1,975	3.1	636.6	636.6	637.0	0.4
L	6.03	227	1,135	3.2	639.5	639.5	640.2	0.7
M	6.40	60	462	5.8	642.9	642.9	643.5	0.6
N	6.60	255	1,373	1.9	647.7	647.7	648.1	0.4
O	6.72	44	258	5.2	649.3	649.3	650.0	0.7
P	6.89	86	365	3.7	654.3	654.3	655.3	1.0

[1]Miles above confluence with Floyds Fork
[2]Elevations without considering backwater effect from Floyds Fork

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

LONG RUN CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
LOVVORN CREEK								
A	360	345	2,409	0.4	577.9	577.9	578.8	0.9
B	2,160	215	1,507	0.6	578.0	578.0	578.8	0.8
C	2,422	34	231	4.2	577.9	577.9	578.7	0.8
D	4,308	44	87	8.0	585.6	585.6	585.7	0.1
E	5,518	56	176	4.0	594.8	594.8	595.7	0.9
F	5,653	31	116	4.2	595.2	595.2	596.2	1.0
G	6,320	17	69	7.0	599.3	599.3	599.4	0.1
H	6,464	18	60	3.5	600.2	600.2	600.9	0.7
I	6,819	25	32	6.5	608.4	608.4	608.4	0.0
J	7,090	17	36	5.9	613.4	613.4	613.4	0.0
K	7,224	19	43	4.8	615.1	615.1	615.1	0.0
L	7,302	36	156	1.3	621.4	621.4	621.4	0.0
M	7,420	25	68	3.0	621.5	621.5	621.5	0.0
N	8,449	22	31	6.7	631.8	631.8	631.8	0.0
O	9,449	25	45	4.5	644.7	644.7	644.8	0.1
P	9,735	26	64	1.7	649.6	649.6	649.6	0.0
Q	9,866	25	21	5.2	652.3	652.3	652.3	0.0

[1]Feet above confluence with Pennsylvania Run

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

LOVVORN CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
LOWER GARRISON DITCH								
A	0.20	17	28	3.2	438.4	438.4	438.4	0.0
B	0.37	32	27	0.7	440.9	440.9	440.9	0.0
LYNNVIEW DITCH								
A	0.20	38	144	4.0	439.3	436.9[2]	436.9	0.0
B	0.66	47	260	2.5	441.5	441.5	441.9	0.4
C	1.13	28	149	4.1	442.4	442.4	443.4	1.0
D	1.40	27	123	4.7	443.0	443.0	443.9	0.9
E	1.72	28	184	3.1	446.9	446.9	447.4	0.5
F	2.10	32	163	2.0	448.6	448.6	449.3	0.7

[1]Miles above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

LOWER GARRISON DITCH - LYNNVIEW DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
MIDDLE FORK BEARGRASS CREEK								
A	0.22	70	967	6.6	447.1	447.1	448.1	1.0
B	0.24	92	1,627	3.9	451.5	451.5	452.5	1.0
C	0.34	89	1,576	4.9	451.9	451.9	452.9	1.0
D	0.37	91	1,808	3.5	452.1	452.1	453.1	1.0
E	0.58	106	1,799	3.6	453.7	453.7	454.7	1.0
F	0.65	93	1,798	3.6	454.4	454.4	455.4	1.0
G	0.67	157	2,724	2.3	455.2	455.2	456.2	1.0
H	0.86	161	2,788	2.3	455.5	455.5	456.5	1.0
I	0.92	152	3,096	2.1	456.0	456.0	457.0	1.0
J	1.41	156	3,111	2.1	456.2	456.2	457.2	1.0
K	1.73	181	3,217	2.0	456.3	456.3	457.3	1.0
L	1.86	109	1,837	3.5	457.9	457.9	458.9	1.0
M	1.92	109	1,848	3.5	458.0	458.0	458.9	0.9
N	1.95	121	2,211	2.9	458.1	458.1	459.0	0.9
O	1.98	124	2,361	2.7	458.1	458.1	459.0	0.9
P	4.03	119	1,239	4.8	462.1	462.1	462.1	0.0
Q	4.12	139	1,305	4.5	468.3	468.3	468.4	0.1
R	4.18	106	772	7.6	468.3	468.3	468.3	0.0
S	4.27	119	831	7.1	469.1	469.1	469.5	0.4
T	4.36	208	1,520	3.9	470.1	470.1	470.8	0.7
U	4.52	171	968	6.1	474.0	474.0	474.7	0.7
V	4.66	155	820	7.2	476.0	476.0	476.7	0.7
W	4.93	110	684	8.6	481.4	481.4	482.3	0.9
X	4.96	125	880	6.7	481.9	481.9	482.9	1.0
Y	4.98	152	1,104	5.3	482.3	482.3	482.9	1.0

[1]Miles above confluence with South Fork Beargrass Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

MIDDLE FORK BEARGRASS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
MIDDLE FORK BEARGRASS CREEK								
Z	5.01	135	909	6.5	483.7	483.7	483.3	0.7
AA	5.19	163	1,185	5.0	485.1	485.1	486.0	0.9
AB	5.21	163	1,226	4.8	485.6	485.6	486.5	0.9
AC	5.39	68	644	9.2	487.8	487.8	488.4	0.6
AD	5.57	91	741	8.0	490.1	490.1	490.7	0.6
AE	5.77	137	989	5.9	494.1	494.1	495.0	0.9
AF	6.21	87	917	6.4	496.5	496.5	497.2	0.7
AG	6.39	103	754	7.7	497.5	497.5	498.5	1.0
AH	6.56	97	758	7.2	499.6	499.6	500.1	0.5
AI	6.73	129	567	9.7	501.9	501.9	502.3	0.4
AJ	6.84	212	1,220	4.5	503.6	503.6	504.4	0.8
AK	6.96	169	843	6.5	504.2	504.2	505.0	0.8
AL	7.03	113	705	7.8	504.7	504.7	505.6	0.9
AM	7.25	120	N/A	N/A	509.4	509.4	509.7	0.3
AN	7.39	210	N/A	N/A	513.0	513.0	514.0	1.0
AO	7.76	144	N/A	N/A	513.4	513.4	514.4	1.0
AP	7.86	280	N/A	N/A	513.6	513.6	514.6	1.0
AQ	8.04	340	N/A	N/A	513.7	513.7	514.7	1.0
AR	8.17	250	N/A	N/A	514.4	514.4	515.1	0.7
AS	8.48	102	749	5.4	519.4	519.4	520.4	1.0
AT	8.66	85	529	7.4	520.4	520.4	521.3	0.9
AU	8.86	128	951	4.2	522.9	522.9	523.5	0.6
AV	8.88	147	1,220	3.2	524.2	524.2	524.6	0.4
AW	9.02	41	443	4.6	524.6	524.6	525.1	0.5
AX	9.22	158	1,093	1.9	525.6	525.6	526.3	0.7

[1] Miles above confluence with South Fork Beargrass Creek

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

MIDDLE FORK BEARGRASS CREEK

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
MIDDLE FORK BEARGRASS CREEK								
AY	9.32	54	192	10.6	528.0	528.0	529.0	1.0
AZ	9.43	83	240	8.5	532.2	532.2	532.6	0.4
BA	9.73	88	187	10.5	547.7	547.7	547.7	0.0
BB	9.77	90	370	5.3	552.0	552.0	552.5	0.5
BC	9.85	40	173	12.1	554.4	554.4	554.4	0.0
BD	10.26	59	330	5.4	567.4	567.4	568.4	1.0
BE	10.49	50	288	6.2	575.8	575.8	576.3	0.5
BF	11.01	69	495	4.8	588.8	588.8	589.3	0.5
BG	11.14	152	966	2.5	591.1	591.1	592.1	1.0
BH	11.50	118	693	3.0	595.5	595.5	596.2	0.7

[1]Miles above confluence with South Fork Beargrass Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

MIDDLE FORK BEARGRASS CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
MILL CREEK								
A	3.20	1,045	2,366	1.7	430.8	430.8	431.5	0.7
B	3.47	790	4,235	1.0	432.1	432.1	433.0	0.9
C	3.99	520	3,321	0.7	432.8	432.8	433.7	0.9
D	4.93	500	3,177	0.5	432.9	432.9	433.8	0.9
E	6.50	550	3,230	0.5	432.9	432.9	433.9	1.0
F	6.91	560	4,692	0.5	433.1	433.1	434.0	0.9
G	8.00	427	1,400	0.5	433.4	433.4	434.2	0.8
H	9.06	269	1,008	0.2	434.9	434.9	435.4	0.5
NORTHERN DITCH								
A	0.081	107	1,465	2.3	455.0	455.0	455.9	0.9
B	1.427	120	1,494	2.3	455.6	455.6	456.5	0.9
C	2.644	210	1,386	1.7	456.4	456.4	457.2	0.8
D	3.019	109	1,214	1.9	457.1	457.1	457.9	0.8
E	3.630	202	1,929	1.3	457.3	457.3	458.1	0.8
F	4.141	2,325	9,045	2.1	457.6	457.6	458.3	0.7
G	4.782	4,238	12,824	1.7	458.7	458.7	459.6	0.9
H	5.088	113	900	4.7	460.1	460.1	460.9	0.8
I	5.429	90	754	4.6	461.5	461.5	462.1	0.6
J	5.846	83	742	5.3	465.5	465.5	465.7	0.2
K	6.747	75	617	7.5	473.8	473.8	473.9	0.1
L	7.057	134	1,009	4.7	478.3	478.3	478.6	0.3
M	7.117	168	1,295	3.7	479.6	479.6	480.6	1.0

[1]Miles above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

MILL CREEK - NORTHERN DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
OHIO RIVER								
A	629.5	5,353 / 2,085	214,488	3.8	442.5	442.5	443.5	1.0
B	629.0	5,372 / 2,925	208,162	3.9	442.5	442.5	443.5	1.0
C	628.0	4,550 / 2,126	195,534	4.2	442.7	442.7	443.7	1.0
D	627.0	4,320 / 1,984	181,686	4.5	442.9	442.9	443.9	1.0
E	626.0	3,047 / 1,530	157,632	5.2	443.1	443.1	444.1	1.0
F	625.0	2,080 /1,538	141,378	5.7	443.3	443.3	444.3	1.0
G	624.0	3,246 / 1,261	172,099	4.7	443.6	443.6	444.6	1.0
H	623.0	3,907 / 1,755	180,609	4.5	443.9	443.9	444.8	0.9
I	622.0	3,131 / 1,854	162,821	5.0	444.1	444.1	445.0	0.9
J	621.0	3,185 / 1,915	163,128	5.0	444.3	444.3	445.2	0.9
K	620.0	2,592 / 2,098	147,251	5.5	444.5	444.5	445.4	0.9
L	619.0	2,345 / 2,145	145,303	5.6	444.7	444.7	445.7	1.0
M	618.0	2,311 / 1,969	146,870	5.5	445.0	445.0	445.9	0.9
N	617.0	3,440 / 1,505	184,181	4.4	445.4	445.4	446.3	0.9
O	616.0	4,054 / 1,355	180,747	4.5	445.5	445.5	446.5	1.0
P	615.0	4,324 / 1,598	193,057	4.2	445.8	445.8	446.7	0.9
Q	614.0	4,211 / 1,527	177,945	4.6	446.0	446.0	446.9	0.9
R	613.0	4,645 / 1,349	194,020	4.2	446.3	446.3	447.2	0.9
S	612.0	4,038 / 1,450	186,656	4.4	446.5	446.5	447.4	0.9
T	611.0	3,291 / 1,315	154,348	5.3	446.6	446.6	447.5	0.9
U	610.0	1,966 / 1,534	138,965	5.8	446.9	446.9	447.9	1.0
V	609.0	2,643 / 2,359	149,084	5.4	447.3	447.3	448.2	0.9
W	608.0	2,399 / 2,170	149,226	5.4	447.5	447.5	448.5	1.0
X	603.5	3,228 / 3,062	174,820	4.6	449.7	449.7	450.7	1.0
Y	603.0	2,105 / 1,951	123,966	6.6	449.7	449.7	450.7	1.0
Z	602.0	2,605 / 2,458	157,016	5.2	450.0	450.0	451.0	1.0

[1]Miles below headwaters at Pittsburgh
[2]Total width / width within county boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

OHIO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
OHIO RIVER								
AA	601.0	1,951 / 1,652	133,848	6.1	450.0	450.0	451.0	1.0
AB	600.0	2,393 / 1,946	143,506	5.7	450.3	450.3	451.2	0.9
AC	599.0	2,952 / 1,905	156,202	5.2	450.5	450.5	451.5	1.0
AD	598.0	3,190 / 2,814	163,598	5.0	450.9	450.9	451.9	1.0
AE	597.0	3,806 / 3,441	202,023	4.0	451.3	451.3	452.3	1.0
AF	596.0	3,437 / 3,053	173,002	4.7	451.5	451.5	452.5	1.0
AG	595.0	2,342 / 2,135	133,367	6.1	451.6	451.6	452.6	1.0
AH	594.0	2,775 / 2,620	155,260	5.2	452.1	452.1	453.1	1.0
AI	593.0	3,588 / 3,474	171,506	4.7	452.4	452.4	453.4	1.0

[1]Miles below headwaters at Pittsburgh
[2]Total width / width within county boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

OHIO RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
PENNSYLVANIA RUN								
A	2,340	66	410	6.9	528.0	528.0	529.0	1.0
B	3,203	52	433	6.5	532.3	532.3	533.0	0.7
C	3,253	52	453	6.2	532.9	532.9	533.6	0.7
D	3,301	69	521	5.4	533.1	533.1	533.8	0.7
E	4,059	113	682	4.1	534.2	534.2	535.1	0.9
F	5,294	97	622	4.3	536.4	536.4	537.4	1.0
G	5,559	40	290	8.6	536.8	536.8	537.8	1.0
H	7,436	91	516	4.8	545.4	545.4	546.4	1.0
I	7,706	76	244	10.3	554.1	554.1	554.1	0.0
J	7,912	523	3,400	3.8	577.6	577.6	578.6	1.0
K	8,473	392	2,742	1.0	578.0	578.0	578.8	0.8
L	12,048	245	1,737	1.6	578.1	578.1	578.9	0.8
M	12,452	217	1,545	1.8	578.1	578.1	579.0	0.9
N	12,933	147	1,027	2.1	578.2	578.2	579.0	0.8
O	13,041	147	1,066	2.1	579.3	579.3	579.7	0.4
P	13,420	126	897	2.5	579.4	579.4	579.7	0.3
Q	14,897	60	440	5.0	580.2	580.2	580.6	0.4
R	15,147	45	191	10.5	582.4	582.4	583.0	0.6
S	15,552	139	528	3.8	586.5	586.5	587.5	1.0
T	15,598	109	444	4.5	587.2	587.2	587.9	0.7
U	15,713	68	360	5.6	587.8	587.8	588.3	0.5
V	16,333	67	359	5.6	589.9	589.9	590.9	1.0
W	16,602	111	878	2.3	595.5	595.5	596.2	0.7
X	17,344	47	228	7.6	595.5	595.5	596.2	0.7
Y	17,940	112	394	4.4	599.2	599.2	600.2	1.0
Z	18,034	46	258	6.1	599.5	599.5	600.5	1.0

[1]Feet above Jefferson County / Bullitt County corporate limits

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

PENNSYLVANIA RUN

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
PENNSYLVANIA RUN								
AA	18,105	46	294	5.4	600.5	600.5	601.5	1.0
AB	18,463	47	236	4.0	602.1	602.1	603.1	1.0
AC	18,518	56	351	2.7	604.6	604.6	605.0	0.4
AD	19,010	82	234	4.1	604.9	604.9	605.2	0.3
AE	19,510	36	116	8.2	607.9	607.9	608.1	0.2
AF	19,609	35	198	4.5	609.1	609.1	610.1	1.0
AG	19,673	47	288	3.1	610.8	610.8	611.8	1.0
AH	20,318	38	102	8.6	612.2	612.2	613.2	1.0
AI	20,466	48	115	7.7	615.2	615.2	615.3	0.1
AJ	20,741	30	106	8.3	618.4	618.4	618.6	0.2
AK	20,911	92	393	2.2	619.8	619.8	620.3	0.5
AL	21,087	48	191	4.2	620.0	620.0	621.0	1.0
AM	21,700	43	104	7.7	624.3	624.3	624.4	0.1
AN	22,267	39	167	3.9	628.6	628.6	629.5	0.9
AO	22,339	42	257	2.5	630.9	630.9	631.9	1.0
AP	22,595	64	206	3.2	631.1	631.1	632.0	0.9
AQ	22,900	44	117	5.6	631.8	631.8	632.8	1.0
AR	22,954	31	180	3.6	634.6	634.6	634.8	0.2
AS	23,655	45	164	3.9	635.8	635.8	636.5	0.7
AT	24,405	24	72	9.0	640.0	640.0	640.0	0.0
AU	24,513	65	215	2.3	641.7	641.7	641.8	0.1
AV	24,602	77	485	1.0	645.5	645.5	645.7	0.2
AW	25,010	148	280	1.7	645.6	645.6	645.8	0.2
AX	25,364	33	73	5.8	646.7	646.7	646.8	0.1
AY	25,396	34	167	2.5	647.7	647.7	648.7	1.0
AZ	25,439	11	47	9.1	647.8	647.8	648.4	0.6

[1]Feet above Jefferson County / Bullitt County corporate limits

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

PENNSYLVANIA RUN

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
POHLMANN BRANCH								
A	400	58	274	2.4	603.2	603.2	604.1	0.9
B	1,050	21	75	8.6	607.3	607.3	607.6	0.3
C	1,905	27	105	6.2	614.6	614.6	615.1	0.5
D	2,073	30	128	4.1	616.2	616.2	617.2	1.0
E	2,094	40	239	2.2	618.1	618.1	618.7	0.6
F	2,178	24	107	4.9	618.1	618.1	618.6	0.5
G	2,548	28	108	4.8	619.5	619.5	620.5	1.0
H	2,641	59	287	1.8	624.0	624.0	624.6	0.6
I	3,098	25	94	5.6	625.5	625.5	626.5	1.0
J	3,613	25	92	5.7	628.9	628.9	629.9	1.0
K	4,063	31	87	6.0	632.2	632.2	633.2	1.0
L	4,598	45	140	3.7	635.1	635.1	635.9	0.8
M	5,394	26	61	8.5	639.6	639.6	640.6	1.0
N	5,894	66	180	2.9	643.7	643.7	644.7	1.0
O	7,276	25	22	5.4	652.7	652.7	652.7	0.0
P	7,436	31	28	4.2	654.1	654.1	654.3	0.2
Q	7,546	28	94	1.3	657.4	657.4	657.4	0.0
R	7,652	19	51	2.3	657.4	657.4	657.4	0.0

[1]Feet above confluence with Pennsylvania Run

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

POHLMANN BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
POND CREEK								
A	6.867	279	2,466	3.8	430.8	430.8	431.7	0.9
B	7.166	538	5,584	2.0	431.8	431.8	432.6	0.8
C	7.753	101	1,598	5.5	432.6	432.6	433.5	0.9
D	8.040	154	1,967	4.4	433.7	433.7	434.6	0.9
E	8.651	82	1,297	6.5	434.9	434.9	435.8	0.9
F	9.119	463	4,607	2.2	436.4	436.4	437.4	1.0
G	9.469	142	1,983	4.2	436.9	436.9	437.9	1.0
H	9.604	85	1,230	6.8	436.9	436.9	437.9	1.0
I	9.895	102	1,570	5.3	438.4	438.4	439.2	0.8
J	10.234	128	2,027	4.1	439.6	439.6	440.4	0.8
K	10.619	110	2,089	3.9	440.7	440.7	441.5	0.8
L	10.960	104	1,633	5.1	441.3	441.3	442.1	0.8
M	11.513	90	1,678	4.9	442.5	442.5	443.2	0.7
N	11.829	111	1,473	5.7	443.4	443.4	444.0	0.6
O	12.120	115	1,586	5.3	444.6	444.6	445.2	0.6
P	12.288	218	2,173	3.9	446.0	446.0	446.5	0.5
Q	12.588	132	1,788	4.7	446.9	446.9	447.3	0.4
R	13.099	137	1,882	4.4	448.0	448.0	448.4	0.4
S	13.499	126	1,900	4.4	448.7	448.7	449.2	0.5
T	13.706	138	1,953	4.4	449.4	449.4	449.8	0.4
U	14.071	183	2,066	4.0	450.3	450.3	450.7	0.4
V	14.662	139	1,988	4.0	451.6	451.6	451.9	0.3
W	15.134	205	2,720	2.6	452.4	452.4	452.8	0.4
X	15.858	131	1,699	4.3	453.2	453.2	453.5	0.3
Y	16.326	156	2,019	3.2	453.9	453.9	454.2	0.3
Z	16.463	135	1,859	3.5	454.0	454.0	454.2	0.2

[1]Miles above confluence with Salt River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

POND CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
POND CREEK								
AA	16.520	142	1,874	3.5	454.5	454.5	454.8	0.3
AB	16.715	48	997	6.5	454.8	454.8	455.1	0.3

[1]Miles above confluence with Salt River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

POND CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
PONDER CREEK								
A	0.10	40	162	6.2	445.2	445.2	445.2	0.0
B	0.30	36	140	7.1	447.1	447.1	447.1	0.0
C	0.41	58	359	2.8	457.2	457.2	457.2	0.0
D	0.53	61	302	3.3	457.8	457.8	457.9	0.1
E	0.79	39	217	4.6	458.4	458.4	458.5	0.1
F	0.90	35	141	7.1	460.9	460.9	460.9	0.0
G	1.10	31	113	8.8	463.9	463.9	463.9	0.0
H	1.23	172	982	1.2	475.8	475.8	475.8	0.0
I	1.40	46	248	4.8	475.8	475.8	475.8	0.0
J	1.50	75	226	5.2	479.8	479.8	479.8	0.0
K	1.63	40	169	6.4	484.4	484.4	484.4	0.0
ROBERSON RUN								
A	0.03	81	402	3.4	473.7	473.7	474.7	1.0
B	0.29	70	249	5.3	478.7	478.7	479.2	0.5
C	0.39	44	280	4.6	483.8	483.8	484.5	0.7
D	0.47	35	158	8.2	484.5	484.5	485.3	0.8
E	0.74	55	249	5.1	495.4	495.4	496.1	0.7
F	0.80	99	419	3.0	498.6	498.6	499.6	1.0
G	1.02	182	1,375	0.9	513.0	513.0	513.3	0.3
H	1.15	42	125	9.6	513.6	513.6	514.3	0.7
I	1.26	61	205	5.8	519.5	519.5	520.4	0.9

[1]Miles above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

PONDER CREEK - ROBERSON RUN

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
ROLLING HILLS BRANCH								
A	0.016	121	610	1.4	590.0	590.0	591.0	1.0
B	0.030	104	505	1.7	590.0	590.0	591.0	1.0
C	0.037	104	450	1.9	590.1	590.1	591.0	0.9
D	0.063	95	414	2.1	590.2	590.2	591.1	0.9
E	0.079	70	276	3.1	590.2	590.2	591.1	0.9
F	0.097	63	248	3.5	590.4	590.4	591.3	0.9
G	0.107	63	238	3.6	592.1	592.1	592.9	0.8
H	0.116	42	172	5.0	592.1	592.1	592.9	0.8
I	0.163	79	264	1.5	592.8	592.8	593.7	0.9
J	0.244	22	48	8.4	596.2	596.2	596.2	0.0
K	0.248	24	69	5.8	597.6	597.6	597.6	0.0
L	0.284	26	201	2.0	606.7	606.7	607.7	1.0
M	0.303	49	282	1.4	606.7	606.7	607.7	1.0
SLATE RUN								
A	0.10	47	278	5.0	451.8	446.4[2]	446.6	0.2
B	0.47	192	771	1.8	455.4	455.4	456.3	0.9
C	0.62	130	508	2.4	456.2	446.2	447.2	1.0
D	0.89	277	812	1.5	458.9	458.9	459.9	1.0
E	0.99	44	229	5.3	459.9	459.9	460.7	0.8
F	1.19	51	194	5.9	463.2	463.2	464.0	0.8
G	1.35	66	291	3.9	467.8	467.8	468.6	0.8

[1] Miles above mouth
[2] Elevation without considering backwater effect from Pond Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

ROLLING HILLS BRANCH - SLATE RUN

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
SOUTHERN DITCH								
A	0.053	102	1,302	2.6	455.0	455.0	455.9	0.9
B	0.527	98	1,217	3.3	455.9	455.9	456.7	0.8
C	1.176	97	1,357	1.8	456.4	456.4	457.2	0.8
D	1.596	84	981	2.4	456.6	456.6	457.4	0.8
E	2.426	99	1,032	4.1	457.5	457.5	458.2	0.7
F	3.217	89	997	3.4	458.7	458.7	459.4	0.7
G	3.379	72	947	3.9	460.1	460.1	460.8	0.7
H	3.448	91	1,110	3.5	460.9	460.9	461.8	0.9
I	3.518	93	1,118	1.6	461.3	461.3	462.2	0.9
J	3.680	80	856	2.4	461.4	461.4	462.3	0.9
K	3.780	97	1,111	2.0	462.0	462.0	462.9	0.9
L	4.080	45	348	2.8	462.2	462.2	463.2	1.0
M	4.334	46	310	3.2	463.1	463.1	463.9	0.8
N	4.534	40	273	3.8	464.3	464.3	465.0	0.7
O	4.744	44	232	4.7	466.9	466.9	467.2	0.3
P	4.760	38	233	4.7	467.7	467.7	468.0	0.3
Q	4.800	51	280	3.9	468.2	468.2	468.4	0.2
R	4.898	47	324	3.7	470.9	470.9	471.4	0.5
S	5.138	42	234	4.2	471.9	471.9	472.4	0.5
T	5.440	44	231	3.1	474.3	474.3	474.6	0.3
U	5.481	37	176	6.3	476.6	476.6	477.0	0.4
V	5.559	41	128	7.0	477.8	477.8	478.0	0.2
W	5.749	46	230	3.0	489.6	489.6	490.5	0.9
X	5.796	41	176	4.0	489.9	489.9	490.7	0.8
Y	5.843	16	63	11.2	491.7	491.7	491.7	0.0
Z	5.881	32	173	5.3	496.6	496.6	497.6	1.0

[1]Miles above confluence with Pond Creek

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

SOUTHERN DITCH

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
SOUTHERN DITCH								
AA	5.917	35	166	4.2	497.6	497.6	498.3	0.7
AB	6.153	28	63	8.6	511.0	511.0	511.0	0.0
AC	6.177	48	202	2.7	515.8	515.8	516.7	0.9
AD	6.241	31	95	5.7	520.1	520.1	520.1	0.0
AE	6.375	20	57	10.9	529.0	529.0	529.0	0.0
AF	6.381	25	104	6.9	531.0	531.0	531.0	0.0
AG	6.427	60	80	6.8	532.4	532.4	532.4	0.0
AH	6.532	32	60	8.0	540.5	540.5	540.5	0.0
AI	6.594	9	39	12.0	548.1	548.1	548.1	0.0
AJ	6.610	60	313	1.5	551.3	551.3	551.8	0.5
AK	6.644	20	52	9.2	551.7	551.7	551.8	0.1
AL	6.744	23	56	8.5	561.2	561.2	561.2	0.0
AM	6.770	69	520	0.9	571.1	571.1	572.0	0.9
AN	6.854	38	83	5.0	571.1	571.1	571.8	0.7
AO	6.964	32	49	7.2	581.5	581.5	581.5	0.0
AP	7.009	20	43	8.3	586.6	586.6	586.6	0.0

[1]Miles above confluence with Pond Creek

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

SOUTHERN DITCH

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
SPRINGHURST CREEK								
A	0.004	42	293	2.7	588.4	588.4	589.4	1.0
B	0.032	55	338	2.4	588.5	588.5	589.5	1.0
C	0.046	55	281	2.9	588.7	588.7	589.7	1.0
D	0.089	20	94	8.5	588.6	588.6	589.5	0.8
E	0.117	38	177	4.5	590.6	590.6	591.6	1.0
STEPHAN DITCH								
A	0.27	41	219	3.0	443.4	443.4	444.1	0.7
B	0.69	47	265	2.7	445.4	445.4	445.9	0.5
C	1.06	47	310	1.6	446.5	446.5	447.0	0.5
D	1.26	38	267	1.8	447.2	447.2	448.1	0.9
E	1.45	44	238	1.8	447.8	447.8	448.3	0.5
F	1.61	32	185	2.1	448.4	448.4	449.2	0.8
UPPER GARRISON DITCH								
A	0.09	22	72	3.5	436.8	434.8[2]	435.8	1.0
B	0.49	32	109	1.4	438.1	438.1	438.9	0.8
C	0.57	31	128	0.9	439.3	439.3	439.9	0.6
D	0.83	22	27	1.9	440.5	440.5	440.6	0.1

[1]Miles above mouth
[2] Elevations without considering backwater effect from Mill Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

SPRINGHURST CREEK - STEPHAN DITCH - UPPER GARRISON DITCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
UPPER MILL CREEK								
A	2.48	103	987	6.4	437.5	437.5	438.4	0.9
B	2.93	88	982	4.7	441.5	441.5	442.0	0.5
C	3.45	76	813	4.5	443.1	443.1	443.6	0.5
D	3.70	79	864	4.3	444.1	444.1	444.6	0.5
E	3.88	90	964	3.8	445.3	445.3	445.8	0.5
F	3.97	74	858	4.3	445.8	445.8	446.2	0.4
G	4.03	76	828	4.4	446.5	446.5	447.0	0.5
H	4.24	68	636	4.7	447.1	447.1	447.6	0.5
I	4.73	57	472	6.4	447.9	447.9	448.9	1.0
J	4.95	68	556	4.6	452.0	452.0	452.9	0.9
VALLEY CREEK								
A	0.55	63	376	6.5	434.8	434.8	434.9	0.1
B	0.68	42	204	12.0	435.5	435.5	435.5	0.0
C	0.77	53	308	8.0	438.2	438.2	438.2	0.0
D	1.20	59	355	4.1	441.6	441.6	441.6	0.0
E	1.40	55	337	2.3	442.2	442.2	442.2	0.0
F	1.60	48	293	2.7	442.4	442.4	442.4	0.0
G	2.30	43	255	1.6	444.0	444.0	444.0	0.0
H	2.60	34	153	2.7	444.3	444.3	444.3	0.0
I	2.71	30	104	3.4	444.6	444.7	444.7	0.0
J	3.00	38	200	1.4	447.5	447.5	447.5	0.0
K	3.43	34	151	1.5	447.7	447.7	447.8	0.1

[1]Miles above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

UPPER MILL CREEK - VALLEY CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
WEICHER CREEK								
A	287	36	210	6.3	508.1	508.1	509.1	1.0
B	712	94	376	3.4	510.2	510.2	510.6	0.4
C	1,090	52	245	5.2	510.6	510.6	511.4	0.8
D	1,383	42	175	7.3	511.8	511.8	512.2	0.4
E	1,908	37	175	7.3	516.0	516.0	516.0	0.0
F	2,473	49	402	3.4	521.4	521.4	521.6	0.2
G	2,836	54	296	4.0	522.1	522.1	522.9	0.8
H	3,621	38	188	4.4	523.7	523.7	524.3	0.6
I	4,472	23	127	6.5	527.1	527.1	527.1	0.0
J	4,723	34	216	3.9	530.8	530.8	531.3	0.5
K	5,545	31	108	3.7	531.6	531.6	532.3	0.7
L	5,845	22	79	5.1	534.3	534.3	534.3	0.0
M	6,930	27	72	3.1	539.8	539.8	539.8	0.0
N	7,494	26	59	4.0	542.0	542.0	542.0	0.0
O	7,870	25	64	3.9	544.0	544.0	544.0	0.0
P	8,192	19	47	4.8	546.6	546.6	546.6	0.0
Q	8,406	17	36	5.2	548.7	548.7	548.7	0.0
R	8,730	27	78	2.4	554.0	554.0	554.4	0.4
S	9,486	25	37	5.1	555.7	555.7	555.7	0.0
T	9,747	30	80	2.4	558.4	558.4	558.5	0.1
U	9,920	32	127	1.5	559.8	559.8	560.8	1.0
V	10,774	22	41	4.5	564.1	564.1	564.1	0.0
W	11,165	226	1,154	0.2	584.1	584.1	585.1	1.0
X	12,309	36	137	1.3	584.1	584.1	585.1	1.0
Y	12,720	234	1,542	0.1	603.3	603.3	604.3	1.0
Z	13,518	21	125	1.5	603.3	603.3	604.3	1.0

[1]Feet above confluence with Middle Fork Beargrass Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

WEICHER CREEK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
WEICHER CREEK								
AA	14,303	14	28	6.8	615.2	615.2	615.7	0.5
AB	14,437	186	848	0.2	623.9	623.9	624.2	0.3
AC	15,029	81	85	2.4	623.9	623.9	624.2	0.3
AD	15,940	49	55	3.7	637.8	637.8	637.8	0.0
AE	16,526	95	136	1.5	647.1	647.1	647.6	0.5

[1]Feet above confluence with Middle Fork Beargrass Creek

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

WEICHER CREEK

TABLE 10

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE 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
WET WOODS CREEK								
A	2.35	58	4,371	0.9	457.8	457.8	458.7	0.9
B	2.42	72	5,536	0.7	457.9	457.9	458.8	0.9
C	2.83	59	3,701	1.2	459.3	458.1[2]	459.1	1.0
D	3.20	55	322	2.0	459.7	458.8[2]	459.8	1.0
WILSON CREEK								
A	0.093	79	780	1.9	455.9	455.9	456.7	0.8
B	0.773	54	609	3.1	458.6	458.6	459.2	0.6
C	0.820	78	824	2.3	459.2	459.2	459.8	0.6
D	1.321	80	707	3.8	462.1	462.1	462.7	0.6
E	1.427	104	670	1.9	463.8	463.8	464.3	0.5
F	1.556	103	510	2.5	463.9	463.9	464.5	0.6
G	2.326	120	562	2.6	468.6	468.6	469.5	0.9
H	2.828	139	755	2.7	472.9	472.9	473.8	0.9
I	3.481	97	373	4.6	478.1	478.1	479.1	1.0
J	4.067	151	654	1.1	487.9	487.9	488.8	0.9
K	4.506	78	152	4.7	496.1	496.1	496.3	0.2
L	4.550	90	540	1.3	501.1	501.1	502.0	0.9
M	4.750	23	75	10.3	503.9	503.9	503.9	0.0
N	4.971	27	124	4.4	511.9	511.9	512.9	1.0
O	5.410	43	152	4.2	524.0	524.0	524.9	0.9

[1]Miles above mouth
[2]Elevations without considering overflow effects from Northern Ditch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY
AND INCORPORATED AREAS

FLOODWAY DATA

WET WOODS CREEK - WILSON CREEK

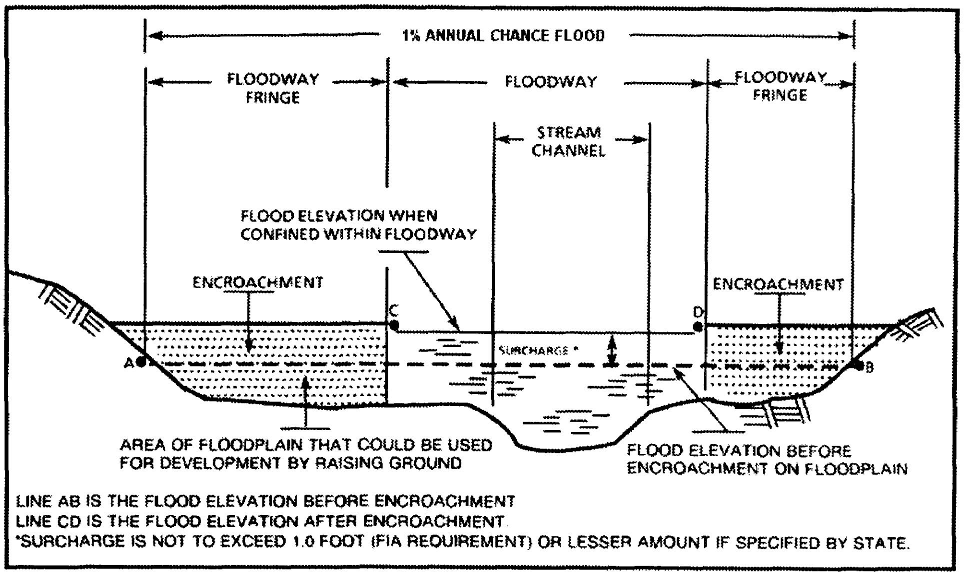

FIGURE 1 – Floodway Schematic

The floodways in this report are recommended to local agencies as minimum standards that can be adopted or used as a basis for additional studies.

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. These zones are as follows:

Zone A

Zone A is the flood insurance risk 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 BFEs or base flood depths are shown within this zone.

Zone AE

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

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, 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 BFEs or base flood depths are shown within this zone.

Zone X (Future Base Flood)

Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

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

For flood insurance applications, the maps designate flood insurance risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs 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- and 0.2-percent-annual-chance floodplains, the 1-percent-annual-chance fully developed floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current Flood Insurance Rate Map presents flooding information for the geographic area of Jefferson County. Historical data relating to the maps prepared for each community are presented in Table 11, Community Map History.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	EFFECTIVE FIRM DATE	FIRM REVISIONS DATE
Jeffersontown, City of	December 23, 1971	May 24, 1974	March 5, 1976	None
Louisville, City of	June 28, 1974	October 15, 1976	July 17, 1978	October 22, 1982
St. Matthews, City of	December 6, 1974	None	March 5, 1976	June 25, 1982
Shively, City of	May 17, 1974	August 27, 1976	August 1, 1978	None
Unincorporated Areas	January 31, 1975	None	April 16, 1979	November 12, 1982

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

METROPOLITAN GOVERNMENT OF LOUISVILLE AND JEFFERSON COUNTY, KENTUCKY AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

FISs have been prepared for Oldham County, Kentucky; Clark County, Indiana; Floyd County, Indiana; the Cities of Jeffersonville and New Albany, Indiana; and the Towns of Clarksville and Utica, Indiana (References 20-26).

Because it is based on more up-to-date analyses, this 2005 FIS report either supersedes or is compatible with the 1994 FIS for Jefferson County, Kentucky and Incorporated Areas (Reference 1).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, Mitigation Division, Koger Center – Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, Georgia 30341.

9.0 BIBLIOGRAPHY AND REFERENCES

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