

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



WHITLEY COUNTY, INDIANA AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
TOWN OF CHURUBUSCO*	180299
CITY OF COLUMBIA CITY	180300
TOWN OF LARWILL*	180572
TOWN OF SOUTH WHITLEY	180301
WHITLEY COUNTY	180298

* No Special Flood Hazard Areas Identified



FEMA

EFFECTIVE:

May 4, 2015

FLOOD INSURANCE STUDY NUMBER
18183CV000A

Version Number 2.2.2.0

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Exhibits

	<u>Panel</u>
Flood Profiles	
Blue River	01-02 P
Phillips Ditch	03 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT WHITLEY COUNTY, INDIANA AND INCORPORATED AREAS

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after

the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Whitley County, Indiana and Incorporated Areas.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Town of Churubusco ¹	180299	05120104	18183C0180C, 18183C0200C	
City of Columbia City	180300	05120104	*18183C0145C, 18183C0161C, 18183C0162C, 18183C0163C, 18183C0164C	
Town of Larwill ¹	180572	05120104, 05120106	18183C0120C, 18183C0140C	
Town of South Whitley	180301	05120104	18183C0210C, 18183C0230C	
Whitley County	180298	05120101, 05120104, 05120106	18183C0020C, *18183C0040C, 18183C0045C, 18183C0065C, 18183C0070C, 18183C0100C, 18183C0110C, 18183C0120C, 18183C0130C, 18183C0135C, 18183C0140C, *18183C0145C, 18183C0155C, 18183C0160C, 18183C0161C, 18183C0162C, 18183C0163C, 18183C0164C, 18183C0170C, 18183C0180C, 18183C0190C, 18183C0200C, 18183C0210C, 18183C0220C, 18183C0230C, 18183C0235C, *18183C0240C, 18183C0245C, 18183C0275C, 18183C0280C, 18183C0290C	

¹ No Special Flood Hazard Areas Identified

* Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 17, “Map Repositories,” within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Whitley County became effective on May 4, 2015. Refer to Table for information about subsequent revisions to the FIRMs.

- **Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels. In addition, former flood hazard zone designations have been changed as follows:**

<u>Old Zone</u>	<u>New Zone</u>
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For

communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

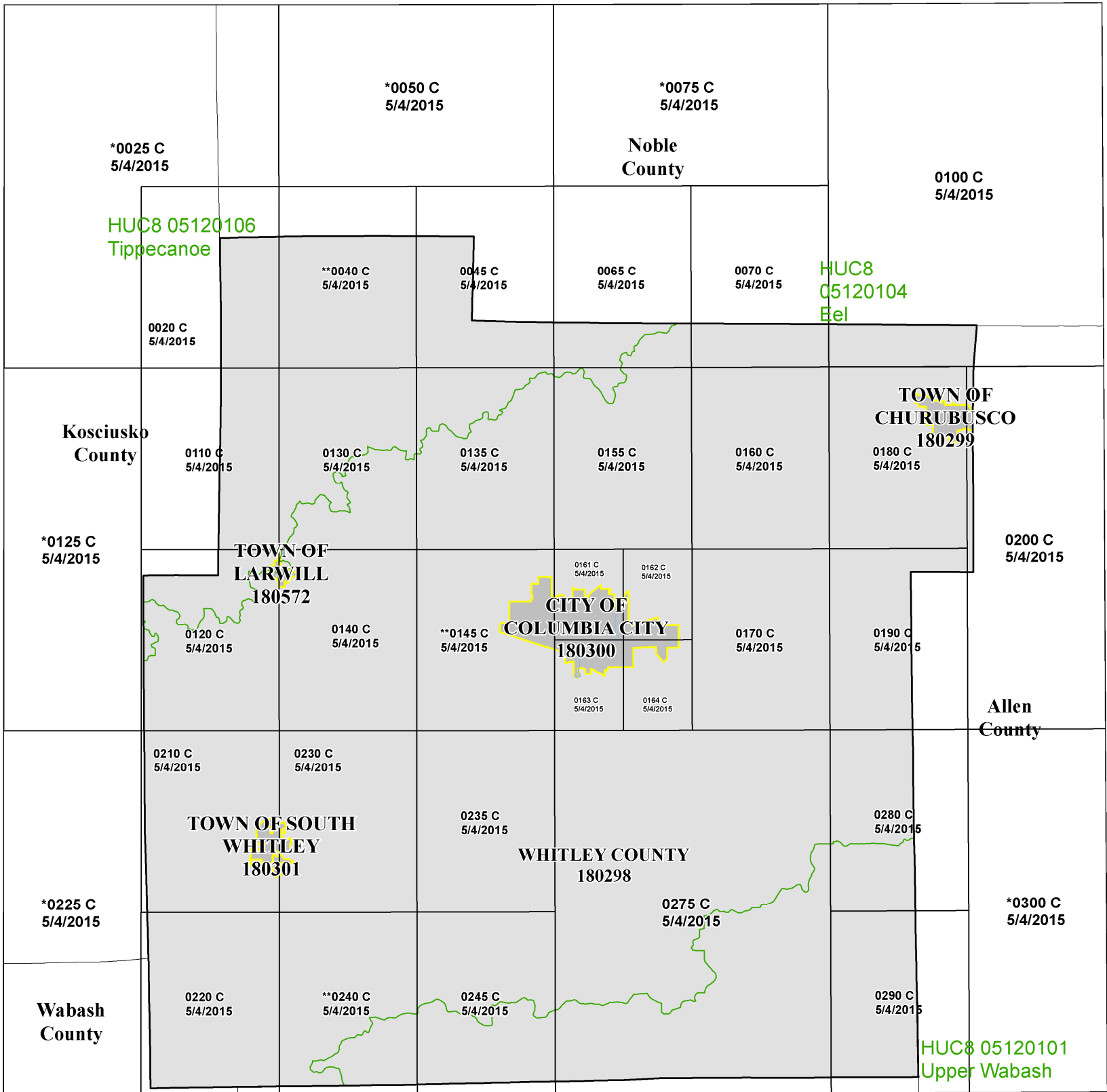
The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at <http://www.fema.gov> or contact your appropriate FEMA Regional Office for more information about this program.


- Previous FIS Reports and FIRMs may have included levees that were accredited as providing protection from the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees with providing protection from the base flood, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled “Mapping of Areas Protected by Levee Systems.”

Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database. For all other levees, the user is encouraged to contact the appropriate local community.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at <http://www.fema.gov>.

Figure 1: FIRM Panel Index





1 inch = 3 miles

0

1.25

2.5

5

Miles

Map Projection:
NAD 1983 StatePlane Indiana East FIPS 1301 Feet
North American Vertical Datum of 1988

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

SEE FIS REPORT FOR ADDITIONAL INFORMATION



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

WHITLEY COUNTY, INDIANA AND INCORPORATED AREAS

PANELS PRINTED:

0020, 0045, 0065, 0070, 0100, 0110, 0120, 0130, 0135, 0140, 0155, 0160, 0161, 0162, 0163, 0164, 0170, 0180, 0190, 0200, 0210, 0220, 0230, 0235, 0245, 0275, 0280, 0290



MAP NUMBER
18183CIND0A
EFFECTIVE DATE
MAY 4, 2015

* PANEL NOT PRINTED - AREA OUTSIDE COPORATE BOUNDARY
** PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 14 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users (continued)

PROJECTION INFORMATION: The projection used in the preparation of the map was STATE PLANE TRANSVERSE MERCATOR, INDIANA EAST ZONE. The horizontal datum was NAD27. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 17 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by . For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Whitley County, Indiana and Incorporated Areas, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 14 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

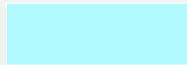
This Notes to Users section was created specifically for Whitley County, Indiana and Incorporated Areas, effective May 4, 2015.

Figure 2. FIRM Notes to Users *(continued)*

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*



Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

- Zone A The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
- Zone AE The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.
- Zone AH The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
- Zone AO The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
- Zone AR The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- Zone A99 The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
- Zone V The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
- Zone VE Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.



Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM (continued)




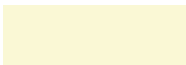
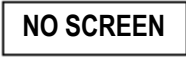
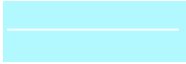





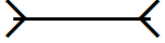
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Zone X Protected by Accredited Levee: Areas protected by an accredited levee, dike or other flood control structures. See Notes to Users for important information.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible
	Unshaded Zone X: Areas determined to be outside the 0.2% annual chance floodplain
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	Flood Zone Boundary (white line)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
<div data-bbox="342 1255 542 1276" style="text-align: center;">-----</div> <div data-bbox="380 1276 505 1373" style="text-align: center;"> <i>Aqueduct</i> <i>Channel</i> <i>Culvert</i> <i>Storm Sewer</i> </div>	Channel, Culvert, Aqueduct, or Storm Sewer
<div data-bbox="380 1423 505 1499" style="text-align: center;"> <i>Dam</i> <i>Jetty</i> <i>Weir</i> </div>	Dam, Jetty, Weir
	Levee, Dike or Floodwall accredited or provisionally accredited to provide protection from the 1% annual chance flood
	Levee, Dike or Floodwall not accredited to provide protection from the 1% annual chance flood.
<div data-bbox="363 1675 526 1717" style="text-align: center;">  <i>Bridge</i> </div>	Bridge

Figure 3: Map Legend for FIRM (continued)


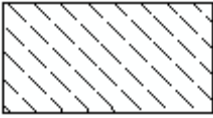

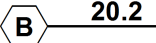
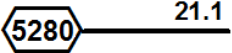
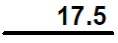
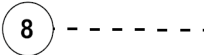


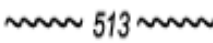








COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): <i>CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.</i>	
 CBRS AREA 09/30/2009	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
 OTHERWISE PROTECTED AREA 09/30/2009	Otherwise Protected Area
REFERENCE MARKERS	
 22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Coastal Transect
 	<p>Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.</p> <p>Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.</p>
 ZONE AE (EL 16) ZONE AO (DEPTH 2) ZONE AO (DEPTH 2) (VEL 15 FPS)	<p>Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)</p> <p>Static Base Flood Elevation value (shown under zone label)</p> <p>Zone designation with Depth</p> <p>Zone designation with Depth and Velocity</p>

Figure 3: Map Legend for FIRM (continued)

BASE MAP FEATURES	
<u>Missouri Creek</u>	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
<u>MAPLE LANE</u>	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
⁴² 76 ^{000m} E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Whitley County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data, study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Whitley County, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 7. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

2.2 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

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water-surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

Figure 4: Floodway Schematic



Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Blue River	City of Columbia City, Whitley County	Phillips Ditch	U.S. 30	05120104	5.4		Y	AE	11/2004
Phillips Ditch	City of Columbia City, Whitley County	Blue River	S.R. 205	05120104	0.4		Y	AE	11/2004
Beal Taylor Ditch	Whitley County	Allen County Line	CR 700S	05120101	3.11		N	A	6/2012
Big Indian Creek	Whitley County	Allen County Line	CR 500E	05120101	3.90		N	A	6/2012
Blue River (excluding Leverage Study)	Whitley County	Eel River	Noble County Line	05120104	8.84		N	A	6/2012
Eel River	Whitley County	Kosciusko County Line	Allen County Line	05120104	2.54		N	A	6/2012
Mishler Ditch	Whitley County	Eel River	Kosciusko County Line	05120104	2.56		N	A	6/2012
Little Indian Creek	Whitley County	Allen County Line	CR 500E	05120101	4.23		N	A	6/2012
Schuman Ditch	Whitley County	Spring Creek	Indian Lake	05120104	5.67		N	A	6/2012
Spring Creek	Whitley County	Clear Creek	Old Trail Road	05120104	4.72		N	A	6/2012
Sugar Creek	Whitley County	Eel River	CR 200W	05120104	5.14		N	A	6/2012
Thorn Creek	Whitley County	Blue River	Round Lake outlet	05120104	3.36		N	A	6/2012
Winters Ditch	Whitley County	Tippecanoe River	Goose Lake	05120106	4.49		N	A	6/2012
Crooked Lake	Whitley County			05120106			N	A	6/2012
Goose Lake	Whitley County			05120106			N	A	6/2012
Loon Lake	Whitley County			05120106			N	A	6/2012

Table 2: Flooding Sources Included in this FIS Report (*continued*)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub- Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
New Lake	Whitley County			05120106			N	A	6/2012
Old Lake	Whitley County			05120106			N	A	6/2012
Robinson Lake	Whitley County			05120106			N	A	6/2012
Shriner Lake	Whitley County			05120104			N	A	6/2012

Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 12, "Floodway Data."

All floodways that were developed for this FIS project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in the unincorporated and incorporated areas of Whitley County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Town of Churubusco	X
City of Columbia City	A, AE, X
Town of Larwill	X
Town of South Whitley	A, X
Whitley County	A, AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square feet)
Eel	05120104	Eel River	Eel River Watershed	6,561,674,085
Tippecanoe	05120106	Tippecanoe River	Tippecanoe River Watershed	1,168,917,122
Upper Wabash	05120101	Wabash River	Wabash River Watershed	1,019,220,893

4.2 Principal Flood Problems

Table 5 contains a description of the principal flood problems that have been noted for Whitley County by flooding source.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Blue River	Please refer to Flood Insurance Rate Map (FIRM)
Phillips Ditch	Please refer to Flood Insurance Rate Map (FIRM)

Table 6 contains information about historic flood elevations in the communities within Whitley County.

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (FEET NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Eel River	South Whitley City Limits, Downstream	785.4	1959	0	Indiana Department of Natural Resources
Eel River	South Whitley City Limits, Upstream	787.7	1959	0	Indiana Department of Natural Resources
Eel River	Confluence with Blue River	801.5	1959	0	Indiana Department of Natural Resources
Eel River	S.R. 9	802.5	1959	0	Indiana Department of Natural Resources
Eel River	Old U.S. 30	793.9	1965	0	Indiana Department of Natural Resources
Eel River	Old U.S. 30	805.3	1959	0	Indiana Department of Natural Resources
Eel River	S.R. 9	791.5	1965	0	Indiana Department of Natural Resources
Eel River	South Whitley City Limits, Upstream	777.5	1965	0	Indiana Department of Natural Resources
Eel River	South Whitley City Limits, Downstream	777	1965	0	Indiana Department of Natural Resources

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources 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 that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); 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.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 9. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 7. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 8.

Table 7: Summary of Discharges

Flooding Source	Location	Drainage Area (square miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Blue River	At U.S. 30	73.1	*	1,910	*	2,500	*	*
Blue River	At Conrail	75.5	*	1,910	*	2,500	*	*
Blue River	Confluence with Phillips Ditch	75.6	*	1,910	*	2,600	*	*
Phillips Ditch	S.R. 205	3.01	*	660	*	770	*	*

*Not calculated for this FIS project

Figure 5: Frequency Discharge-Drainage Area Curves

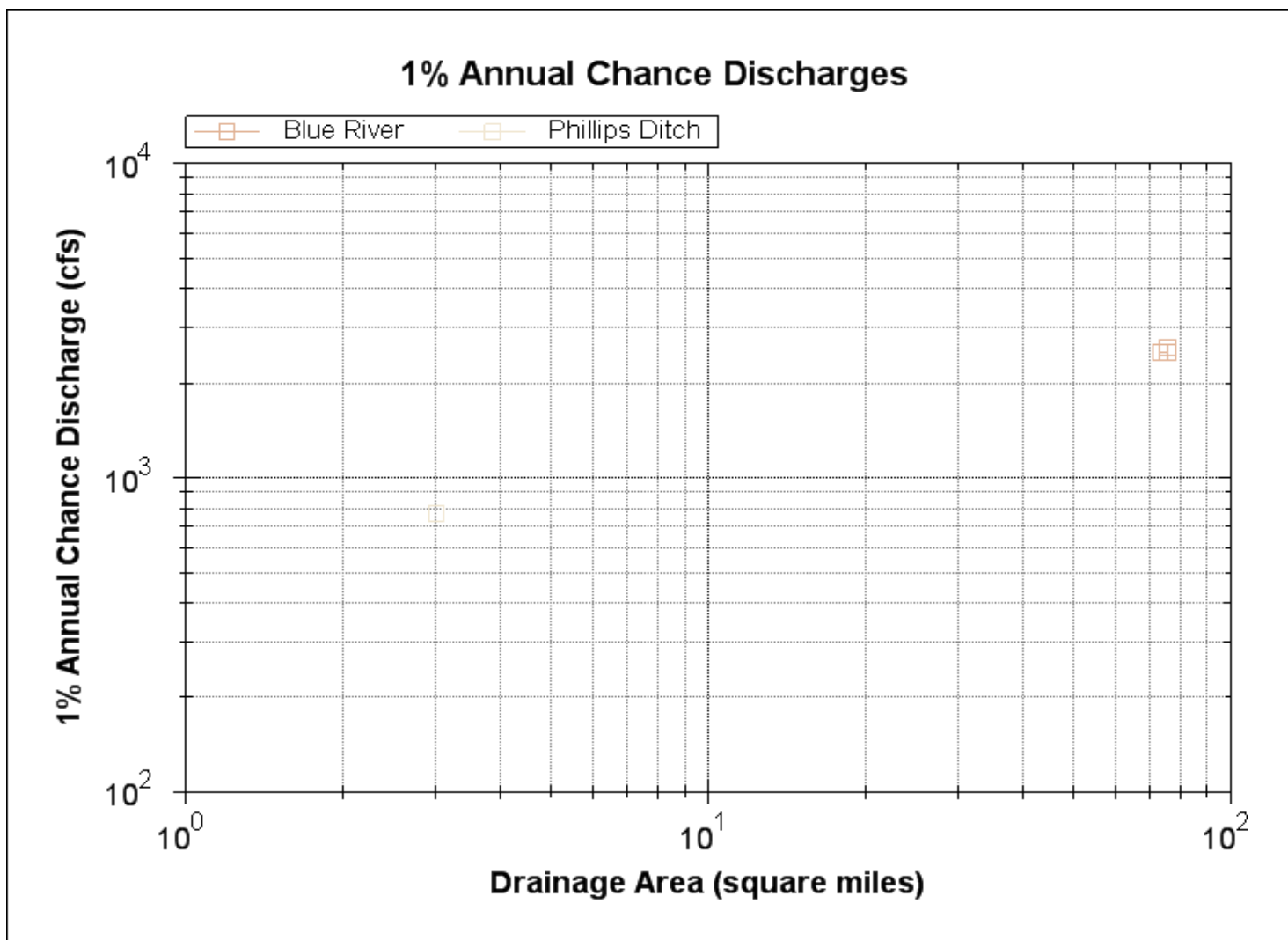


Table 8: Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (Feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Crooked Lake	1 Percent Chance	*	*	*	906.7	*
Goose Lake	1 Percent Chance	*	*	*	913.1	*
Loon Lake	1 Percent Chance	*	*	*	898.7	*
New Lake	1 Percent Chance	*	*	*	905.1	*
Old Lake	1 Percent Chance	*	*	*	900.2	*
Robinson Lake	1 Percent Chance	*	*	*	852.6	*
Shriner Lake	1 Percent Chance	*	*	*	908	*

*Not calculated for this FIS project

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on 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.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 13, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 9. Roughness coefficients are provided in Table . Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 9: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Blue River	Phillips Ditch	U.S. 30	Regression	HEC-RAS	11/2004	AE	Leverage Study
Phillips Ditch	Blue River	S.R. 205	TR-20	HEC-RAS	11/2004	AE	Leverage Study
Beal Taylor Ditch	Allen County Line	County Road 700S	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Big Indian Creek	Allen County Line	County Road 500E	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Blue River	Eel River	Noble County Line	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	Excluding the Leverage Study
Eel River	Kosciusko County Line	Allen County Line	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Mishler Ditch (Eel River Trib 1)	Eel River	Kosciusko County Line	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Little Indian Creek	Allen County Line	County Road 500E	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Spring Creek	Clear Creek	Old Trail Road	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Schuman Ditch (Spring Creek Trib 5)	Spring Creek	Indian Lake	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Sugar Creek	Eel River	County Road 200W	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Thorn Creek	Blue River	Round Lake Outlet	Regressions, Purdue, 2005	HEC-RAS	6/2012	A	
Winters Ditch	Tippecanoe River	Goose Lake	Regressions, Purdue 2005	HEC-RAS	6/2012	A	

Table 10: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Blue River	0.04-0.06	0.06-0.100

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

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 used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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 FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Whitley County are provided in Table 11.

Table 11: Countywide Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
COUNTYWIDE\COMMUNITY-BASED	-0.500

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Mapping Partners*, Appendix L.

Base map information shown on the FIRM was derived from the sources described in Table .

Table 12: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
10' DEM for Whitley County, IN	Indiana Department of Homeland Security	2006	1:1,200	
Digital Orthophoto Quadrangle	U.S. Geological Survey	2006	1:12,000	
DLG Hydrography	U.S. Geological Survey	2004	1:24,000	
Final Panel Scheme	Indiana Department of Natural Resources	2006	1:24,000	
GISRDS	Indiana Department of Transportation	2006	1:100,000	
Incorporated Cities and Towns	Indiana Department of Transportation	2007	1:24,000	

Table 12: Base Map Sources *(continued)*

Data Type	Data Provider	Data Date	Data Scale	Data Description
Land Survey Information of Indiana	Indiana Geological Survey	2002	1:24,000	
NHDFlowline	U.S. Geological Survey	2006	1:24,000	
NHDFlowline	U.S. Geological Survey	2006	1:100,000	
Permanant Bench Mark Data Sheets	National Geodetic Survey	2002	1:12,000	
USGS 7.5-Minute Series Topographic Map Digital Data	U.S. Geological Survey	2003	1:24,000	
USGS 7.5-Minute Series Topographic Maps	U.S. Geological Survey	1989	1:24,000	

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic elevation data.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed 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. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 13, "Floodway Data."

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 13: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1.99	67	500	5.2	815.8	815.8	815.9	0.1
B	2.25	60	538	4.6	817.4	817.4	817.6	0.1
C	2.46	63	502	5.2	818.6	818.6	818.7	0.1
D	2.64	59	516	4.8	820.2	820.2	820.3	0.1
E	2.90	189	1,048	3.3	821.8	821.8	821.9	0.1
F	3.37	73	696	3.6	823.4	823.4	823.5	0.1
G	3.81	375	1,469	2.7	824.8	824.8	824.9	0.1
H	4.19	84	719	3.8	826.0	826.0	826.1	0.1
I	4.46	504	1,401	2.9	826.7	826.7	826.8	0.1
J	4.69	110	794	3.5	827.2	827.2	827.3	0.1
¹ DISTANCE IN MILES ABOVE MOUTH								
TABLE 13	FEDERAL EMERGENCY MANAGEMENT AGENCY WHITLEY COUNTY, INDIANA AND INCORPORATED AREAS			FLOODWAY DATA				
				FLOODING SOURCE: BLUE RIVER				

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET / SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	0.07	41	330	2.4	817.0	817.0	817.1	0.1
B	0.16	38	266	2.9	817.7	817.7	817.8	0.1

¹DISTANCE IN MILES ABOVE MOUTH

TABLE 13

FEDERAL EMERGENCY MANAGEMENT AGENCY
WHITLEY COUNTY, INDIANA
 AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PHILLIPS DITCH

6.4 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions to FIS projects may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 17, “Map Repositories”).

6.4.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit <http://www.fema.gov> and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.4.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting <http://www.fema.gov> for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

6.4.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All

requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit <http://www.fema.gov> and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

No previously issued mappable LOMCs (including LOMRs) have been incorporated into the Whitley County FIRM.

6.4.4 Physical Map Revisions

PMRs are an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit <http://www.fema.gov> and visit the “Flood Map Revision Processes” section.

6.4.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.4.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Whitley County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 14, “Community Map History.” A description of each of the column headings and the source of the data is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and

communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or “pending” (for Preliminary FIS Reports) is shown. If the community is listed in Table 14 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.
- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community. This is the first effective date that is shown on the FIRM panel.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

Table 14: Community Map History

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
City of Columbia City	12/17/1973	12/17/1973	9/24/1976	1/5/1979	5/4/2015
Town of Churubusco ¹	5/4/2015	N/A	N/A	5/4/2015	N/A
Town of Larwill ¹	5/4/2015	N/A	N/A	5/4/2015	N/A
Town of South Whitley	12/21/1973	12/21/1973	10/31/1975	8/19/1985	5/4/2015
Whitley County	12/13/1974	12/13/1974	9/9/1977	4/1/1988	5/4/2015

¹No Special Flood Hazard Areas Identified

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 15 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 15: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Blue River	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	11/8/2004	Columbia City, Whitley County
Phillips Ditch	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	11/8/2004	Columbia City, Whitley County
Beal Taylor Ditch	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Whitley County
Big Indian Creek	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Whitley County
Blue River	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Columbia City, Whitley County
Eel River	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Columbia City, South Whitley, Whitley County
Mishler Ditch	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Whitley County
Little Indian Creek	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Whitley County
Schuman Ditch	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Whitley County

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Spring Creek	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	South Whitley, Whitley County
Sugar Creek	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	South Whitley, Whitley County
Thorn Creek	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Whitley County
Winters Ditch	5/4/2015	Christopher B. Burke Engineering, Ltd.	EMC-2008-CA-7017	6/2012	Whitley County

7.2 Community Meetings

The dates of the community meetings held for this FIS project and any previous FIS projects are shown in Table 16. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 16: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Whitley County and Incorporated Areas	05/04/15	09/11/07	Scoping	City of Columbia City, County Commissioner, Region III, Whitley County
		04/16/13	Final CCO	City of Columbia City, Indiana Department of Natural Resources, Town of Churubusco, Town of Larwill, Whitley County

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see <http://www.fema.gov>.

Table 17 is a list of the locations where FIRMs for Whitley County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 17: Map Repositories

Community	Address	City	State	Zip Code
City of Columbia City	Columbia City/Whitley County Joint Planning and Building Department Whitley County Government Center, Suite 201 216 West Van Buren Street	Columbia City	IN	46722
Town of Churubusco	Columbia City/Whitley County Joint Planning and Building Department Whitley County Government Center, Suite 200 216 West Van Buren Street	Columbia City	IN	46721
Town of Larwill	Columbia City/Whitley County Joint Planning and Building Department Whitley County Government Center, Suite 202 216 West Van Buren Street	Columbia City	IN	46723
Town of South Whitley	Columbia City/Whitley County Joint Planning and Building Department Whitley County Government Center, Suite 203 216 West Van Buren Street	Columbia City	IN	46724
Whitley County	Columbia City/Whitley County Joint Planning and Building Department Whitley County Government Center, Suite 204 216 West Van Buren Street	Columbia City	IN	46725

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 18.

Table 18 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

Table 18: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	http://www.fema.gov
NFIP website	http://www.fema.gov/business/nfip
NFHL Dataset	http://msc.fema.gov
FEMA Region V	536 South Clark Street, 6th Floor Chicago, IL 60605 (312) 408-5364
Other Federal Agencies	
USGS website	http://www.usgs.gov
Hydraulic Engineering Center website	http://www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	State National Floodplain Insurance Program (NFIP) Coordinator Gregory Main, CFM Program Chair 402 W. Washington Street, Room W264 Indianapolis, IN 46204-2748 (317) 234-1107 gmain@dnr.in.gov
State GIS Coordinator	State GIS Coordinator Jill Saligoe-Simmel, Ph.D. Crisis Response Mapping Center 101 W. Ohio Street, Suite 800 Indianapolis, IN 46204-1974 (317) 233-6009 jsaligoe@iupui.edu

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 19 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 19: Bibliography and References

Citation in this FIS	Publisher/Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Spring Creek Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Lake Delineation of Robinson Lake Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Lake Delineation of Goose Lake Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Lake Delineation of Shriner Lake Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Lake Delineation of Crooked Lake Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Lake Delineation of Loon Lake Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Lake Delineation of New Lake Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Lake Delineation of Old Lake Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/

Table 19: Bibliography and References *(continued)*

Citation in this FIS	Publisher/Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/Date of Issuance	Link
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Big Indian Creek Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Eel River Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Redelineation Study of Phillips Ditch Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Schuman Ditch Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Sugar Creek Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Blue River Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Leverage Study of Blue River Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Little Indian Creek Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/

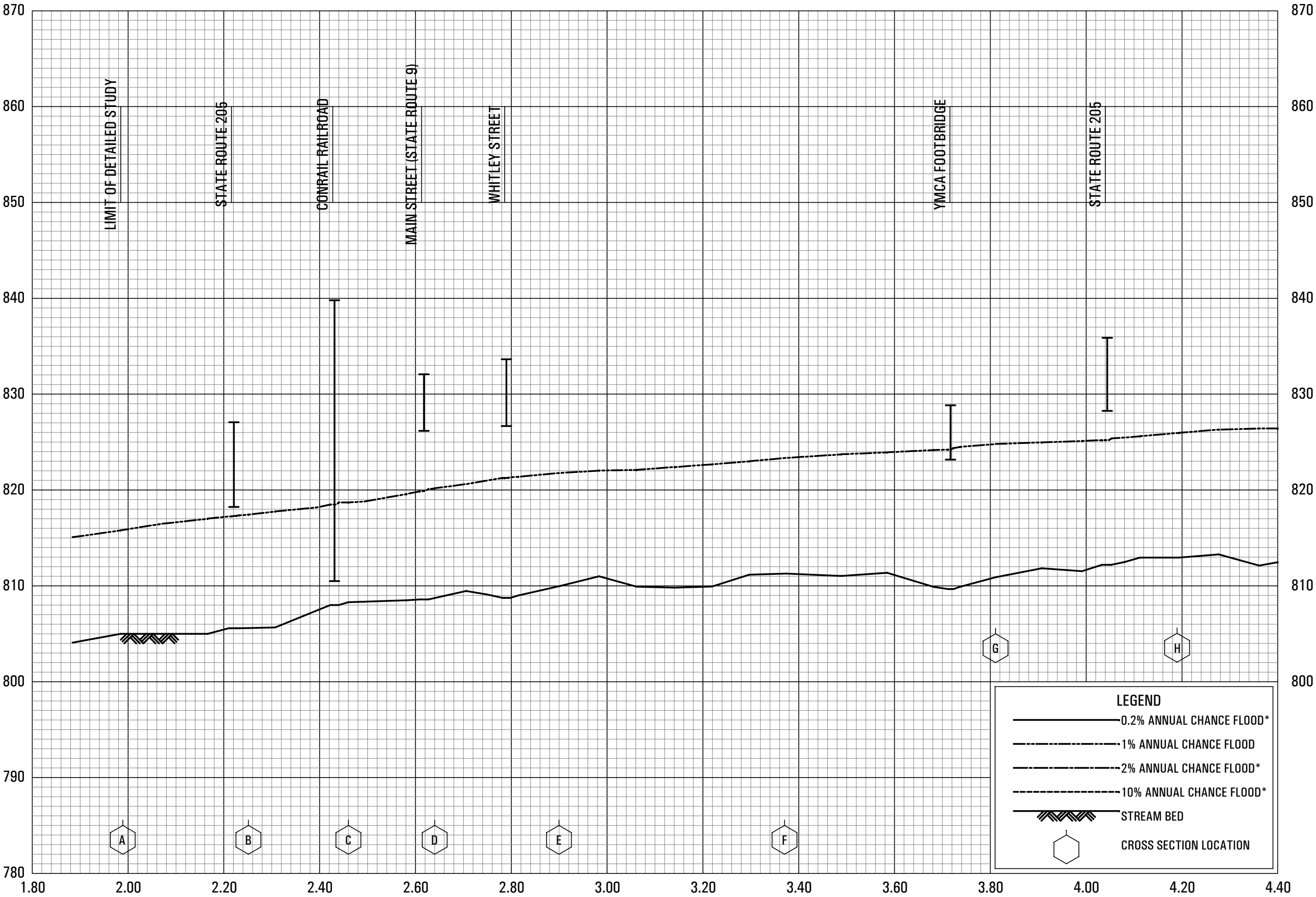
Table 19: Bibliography and References *(continued)*

Citation in this FIS	Publisher/Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/Date of Issuance	Link
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Thom Creek Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Winters Ditch in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Beal Taylor Ditch Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
Burke Engineering, 2011	Indiana Department of Natural Resources	<i>Approximate Study of Mishler Ditch Floodplain in Whitley County, IN</i>	Christopher B. Burke Engineering, Ltd.	Indianapolis, IN	January 2011	http://www.cbbel.com/
IDNR, 2004	Indiana Department of Natural Resources	<i>Digital Flood Insurance Rate Map Database, Whitley County, Indiana, USA</i>	Indiana Department of Natural Resources	Indianapolis, IN	January 2004	http://www.in.gov/dnr/
IDNR, 2011	Indiana Department of Natural Resources	<i>Leverage of Round, Cedar, Little Cedar Lake Floodplain in Whitley County, IN</i>	Indiana Department of Natural Resources	Indianapolis, IN	January 2011	http://www.in.gov/dnr/
IGA, 1	Indiana General Assembly	<i>Indiana General Assembly Title 312 Natural Resources Commission Article 10. Flood Plain Management</i>	Indiana General Assembly	Indianapolis, IN	May 23, 2012	http://www.in.gov/legislative/ia/c/iac_title?iact=312
IGA, 2	Indiana General Assembly	<i>Indiana Code IC 14-28-1 Flood Control Act</i>	Indiana General Assembly	Indianapolis, IN	N/A	http://www.in.gov/legislative/ic/code/title14/ar28/ch1.html

Table 19: Bibliography and References *(continued)*

Citation in this FIS	Publisher/Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/Date of Issuance	Link
IDNR	Indiana Department of Natural Resources	<i>Coordinated Discharges of Selected Streams in Indiana</i>	Division of Water	Indianapolis, IN	N/A	http://www.in.gov/dnr/water/4898.htm
IDNR, 2002	Indiana Department of Natural Resources	<i>General Guidelines for the Hydrologic-Hydraulic Assessment of Floodplains in Indiana</i>	Division of Water	Indianapolis, IN	December 25, 2002	http://www.in.gov/dnr/water/files/fp_guidelines.pdf
KNIFE& RAO, 2005	Purdue University	<i>Estimation of Peak Discharges of Indiana Streams by Using the Log Pearson III Distribution</i>	Knipe, Davis, and Rao, A.R.	School of Civil Engineering, Joint Transportation Research	2005	N/A

ELEVATION IN FEET (NAVD 88)



LEGEND

0.2% ANNUAL CHANCE FLOOD*

1% ANNUAL CHANCE FLOOD

2% ANNUAL CHANCE FLOOD*

10% ANNUAL CHANCE FLOOD*

STREAM BED

CROSS SECTION LOCATION

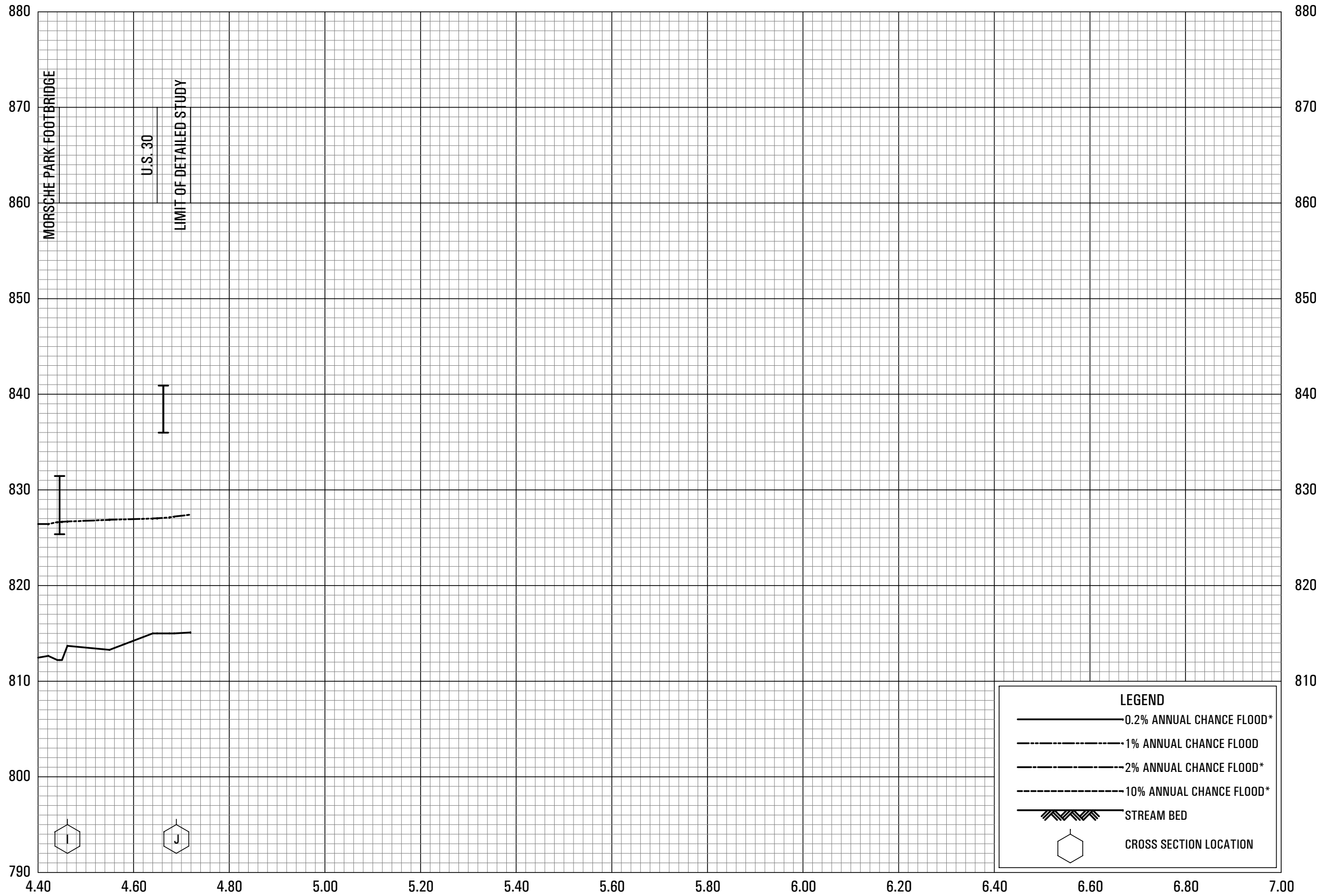
*DATA NOT AVAILABLE FOR THESE PROFILES

FLOOD PROFILES

BLUE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
WHITLEY COUNTY, IN
AND INCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)



STREAM DISTANCE IN MILE ABOVE MOUTH

*DATA NOT AVAILABLE FOR THESE PROFILES

FEDERAL EMERGENCY MANAGEMENT AGENCY
WHITLEY COUNTY, IN
AND INCORPORATED AREAS

FLOOD PROFILES

BLUE RIVER

02P

