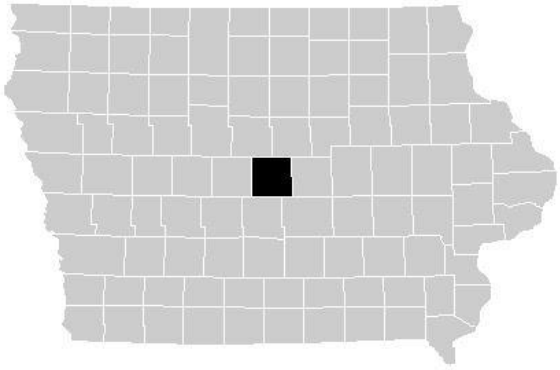
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2



STORY COUNTY, IOWA

AND INCORPORATED AREAS

COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
AMES, CITY OF	190254	MCCALLSBURG, CITY OF	190315
CAMBRIDGE, CITY OF	190255	NEVADA, CITY OF	190258
COLLINS, CITY OF	190719	ROLAND, CITY OF	190513
COLO, CITY OF*	190839	SLATER, CITY OF	190659
GILBERT, CITY OF	190256	STORY CITY, CITY OF	190259
HUXLEY, CITY OF	190597	STORY COUNTY, UNINCORPORATED AREAS	190907
KELLEY, CITY OF*	190748	ZEARING, CITY OF	190260
MAXWELL, CITY OF	190257		

*No Special Flood Hazard Areas Identified

REVISED:

January 15, 2021

FLOOD INSURANCE STUDY NUMBER
19169CV001C

Version Number 2.5.3.0

FEMA

TABLE OF CONTENTS
Volume 1

Figures

Page

Tables

Page

Exhibits

Volume 2

Exhibits

Exhibits

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
STORY COUNTY, IOWA

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 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, *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 Story County, Iowa.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The 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.

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
Ames, City of	190254	07080105	19169C0135F 19169C0137G 19169C0139G 19169C0141F 19169C0142F 19169C0143G 19169C0144G 19169C0155F 19169C0161F 19169C0162F	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Ames, City of (continued)	190254	07080105	19169C0163G 19169C0164F 19169C0168F 19169C0170F 19169C0256G 19169C0257G 19169C0276F 19169C0277F	
Cambridge, City of	190255	07080105	19169C0291F 19169C0292F 19169C0293F 19169C0294F	
Collins, City of	190719	07080105	19169C0340F 19169C0345F	
Colo, City of[1]	190839	07080105	19169C0215F 19169C0225F	
Gilbert, City of	190256	07080105	19169C0131F 19169C0132F	
Huxley, City of	190597	07080105	19169C0286F 19169C0287F 19169C0290F 19169C0293F	
Kelley, City of[1]	190748	07080105	19169C0258F 19169C0259F	
Maxwell, City of	190257	07080105	19169C0319F	
McCallsburg, City of	190315	07080105, 07080207	19169C0075F	
Nevada, City of	190258	07080105	19169C0170F 19169C0187F 19169C0188F 19169C0189F 19169C0191F 19169C0193F 19169C0305F	
Roland, City of	190513	07080105	19169C0042F 19169C0061F	
Sheldahl, City of	190084	07100004, 07100008	N/A	Polk County FIS Report, 2019
Slater, City of	190659	07080105, 07100004, 07100008	19169C0265F 19169C0270F 19169C0380F 19169C0385F	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Story City, City of	190259	07080105	19169C0028F[1,2] 19169C0029F 19169C0035F 19169C0036F 19169C0037F 19169C0045F	
Story County, Unincorporated Areas	190907	07080105, 07080106, 07080207, 07080208, 07100004, 07100008	19169C0005F[1,2] 19169C0010F 19169C0015F[1,2] 19169C0020F 19169C0028F[1,2] 19169C0029F 19169C0035F 19169C0036F 19169C0037F 19169C0040F 19169C0042F 19169C0045F 19169C0055F 19169C0061F 19169C0065F 19169C0075F 19169C0091F 19169C0093F 19169C0100F 19169C0125F 19169C0130F 19169C0131F 19169C0132F 19169C0135F 19169C0137G 19169C0139G 19169C0141F 19169C0142F 19169C0143G 19169C0144G 19169C0155F 19169C0160F 19169C0161F 19169C0162F 19169C0163G 19169C0164F 19169C0168F 19169C0170F 19169C0180F	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Story County, Unincorporated Areas (continued)	190907	07080105, 07080106, 07080207, 07080208, 07100004, 07100008	19169C0185F 19169C0186F 19169C0187F 19169C0188F 19169C0189F 19169C0191F 19169C0193F 19169C0195F 19169C0215F 19169C0225F 19169C0250F 19169C0255F 19169C0256G 19169C0257G 19169C0258F 19169C0259F 19169C0265F 19169C0267F 19169C0270F 19169C0276F 19169C0277F 19169C0278F 19169C0279F 19169C0283F 19169C0284F 19169C0285F 19169C0286F 19169C0287F 19169C0290F 19169C0291F 19169C0292F 19169C0293F 19169C0294F 19169C0305F 19169C0310F 19169C0315F 19169C0319F 19169C0320F 19169C0330F 19169C0335F 19169C0340F 19169C0345F 19169C0355F 19169C0365F 19169C0380F	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Story County, Unincorporated Areas (continued)	190907	07080105, 07080106, 07080207, 07080208, 07100004, 07100008	19169C0385F 19169C0405F 19169C0410F 19169C0430F 19169C0435F 19169C0450F[2] 19169C0455F 19169C0460F 19169C0500F[1,2]	
Zearing, City of	190260	07080207	19169C0091F 19169C0093F	

[1] No Special Flood Hazard Areas Identified
[2] 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 30: Map Repositories, "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 Story County became effective on February 20, 2008. Refer to Table 27 for information about subsequent revisions to the FIRMs.

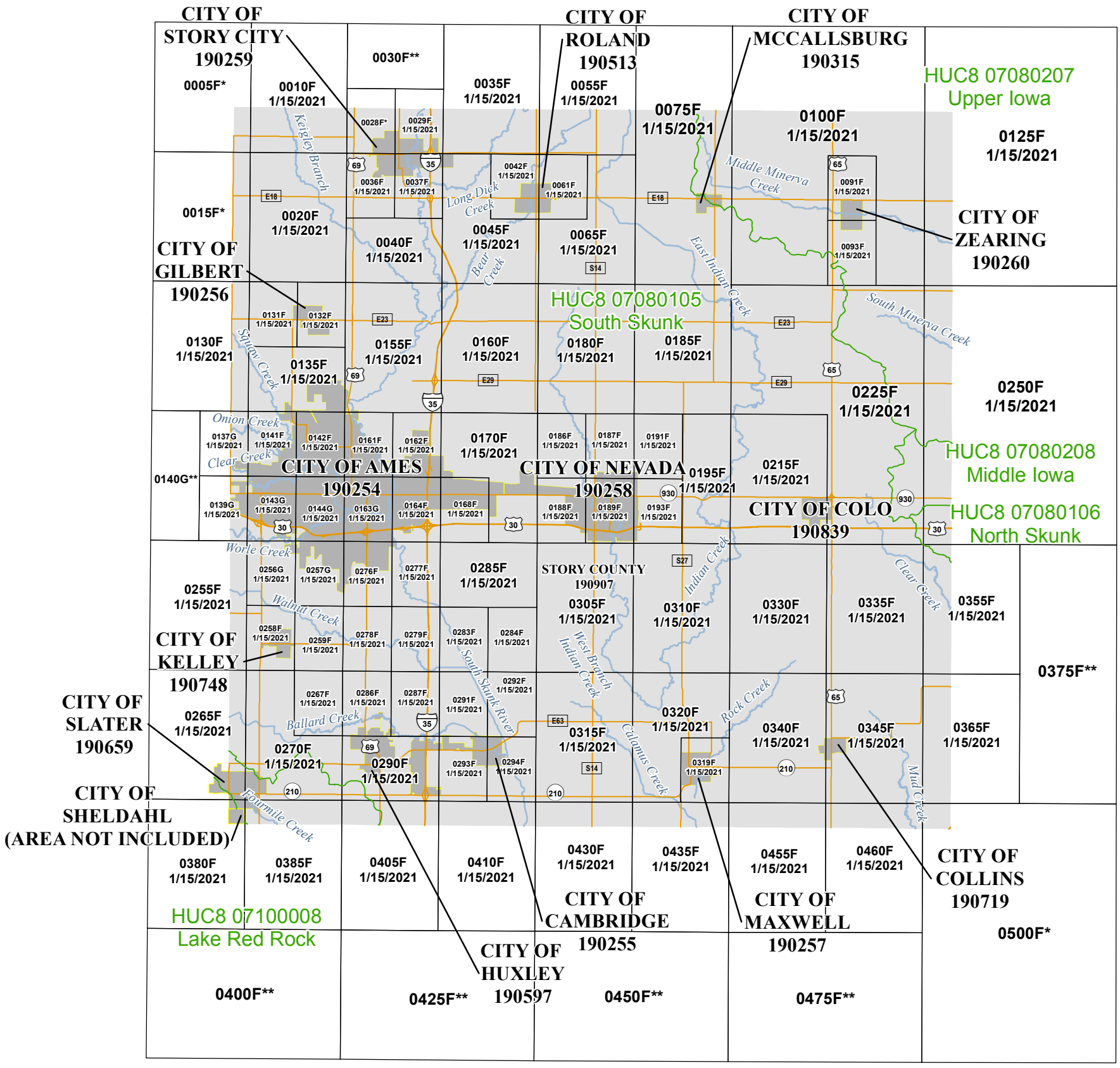
- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must 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 presented in Table 8 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE National Levee Database (nld.usace.army.mil). 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 www.fema.gov/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Story County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and USGS HUC-8 codes.

Figure 1: FIRM Index



1 inch = 4 miles 1:256,500

N

0 2 4 8 Miles

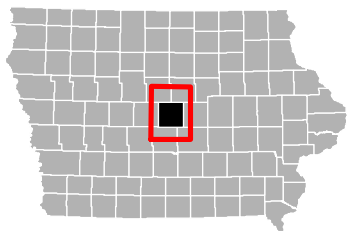
Map Projection:
Universal Transverse Mercator Zone 15N;
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

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

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

STORY COUNTY, IOWA and Incorporated Areas

PANELS PRINTED:

0010, 0020, 0029, 0035, 0036, 0037, 0040, 0042, 0045, 0055, 0061, 0065, 0075, 0091, 0093, 0100, 0125, 0130, 0131, 0132, 0135, 0137, 0139, 0141, 0142, 0143, 0144, 0155, 0160, 0161, 0162, 0163, 0164, 0168, 0170, 0180, 0185, 0186, 0187, 0188, 0189, 0191, 0193, 0195, 0215, 0225, 0250, 0255, 0256, 0257, 0258, 0259, 0265, 0267, 0270, 0276, 0277, 0278, 0279, 0283, 0284, 0285, 0286, 0287, 0290, 0291, 0292, 0293, 0294, 0305, 0310, 0315, 0319, 0320, 0330, 0335, 0340, 0345, 0355, 0365, 0380, 0385, 0405, 0410, 0430, 0435, 0455, 0460

FEMA

MAP NUMBER
19169CIND0C

MAP REVISED
JANUARY 15, 2021

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

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 Flood Map Service Center website at 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 Flood 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 Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 27: Community Map History 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.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

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 Non-Coastal 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

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 15N. The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. 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 the North American Vertical Datum of 1988. 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 the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov.

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 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on this FIRM was derived from digital orthophotography collected by the Iowa Geological and Water Survey, Department of Natural Resources. This imagery was flown in 2009. 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 Story County, Iowa, 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 27: Community Map History 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.

Figure 2. FIRM Notes to Users

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.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Story County.

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.
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.

Figure 3: Map Legend for FIRM

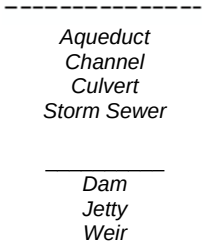
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood 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.
	Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
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 of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
(ortho) (vector)	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	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	
	Channel, Culvert, Aqueduct, or Storm Sewer
	Dam, Jetty, Weir

Figure 3: Map Legend for FIRM

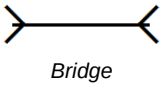
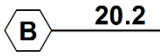
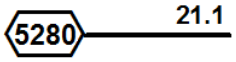
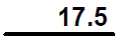
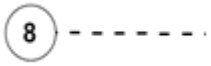
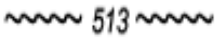
	Levee, Dike, or Floodwall
	Bridge
REFERENCE MARKERS	
	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Coastal Transect
	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.
	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.
	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway

Figure 3: Map Legend for FIRM

234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	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 Story 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 (Table), 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 Story 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 . 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.

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
Ballard Creek	Huxley, City of; Story County, Unincorporated Areas	Approximately 500 feet downstream of Interstate Highway 35	Approximately 1.5 miles upstream of U.S. Highway 69	07080105	5.0		Y	AE	12/1/1982
Bear Creek	Story County, Unincorporated Areas	Approximately 600 feet downstream of Interstate Highway 35	City of Roland southern corporate limit	07080105	2.3		Y	AE	12/1/1982
Bear Creek	Story County, Unincorporated Areas	City of Roland northern corporate limit	Approximately 2.0 miles upstream of the City of Roland corporate limit	07080105	2.7		Y	AE	12/1/1982
Clear Creek	Ames, City of; Story County, Unincorporated Areas	Mouth at Squaw Creek	City of Ames corporate limit	07080105	4.1		Y	AE	4/1/1978
College Creek	Ames, City of; Story County, Unincorporated Areas	Approximately 100 feet downstream of South Dakoata Avenue	Approximately 3,860 feet downstream of South Dakota Avenue	07080105	4.4		Y	AE	4/1/1978
Four Mile Creek	Slater, City of; Story County, Unincoprorated Areas	County Boundary	City of Slater corporate limit	07100008	1.0		Y	AE	12/1/1982
Indian Creek	Maxwell, City of; Story County, Unincorporated Areas	County Boundary	Approximately 5.3 miles upstream	07080105	5.3		Y	AE	8/1/1983
Keigley Creek	Story County, Unincorporated Areas	Mouth at Skunk River	Approximately 2.6 miles upstream	07080105	2.5		Y	AE	12/1/1982
Lateral A	Story County, Unincorporated Areas	Approximately 4,000 feet upstream of the mouth	Approximately 1.9 miles upstream	07080105	1.1		Y	AE	12/1/1982
Long Dick Creek	Story County, Unincorporated Areas	Mouth at Skunk River	Approximately 3.6 miles upstream	07080105	3.6		Y	AE	12/1/1982

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
Onion Creek	Ames, City of; Story County, Unincorporated Areas	Mouth at Squaw Creek	Approximately 2,000 feet downstream of the county boundary	07080105	3.8		Y	AE	4/1/1978
Rock Creek	Maxwell, City of; Story County, Unincorporated Areas	Mouth at Indian Creek	Approximately 2.9 mles upstream	07080105	2.8		Y	AE	8/1/1983
Rock Creek Tributary	Maxwell, City of; Story County, Unincorporated Areas	City of Maxwell corporate limit	Approximately 3,000 feet upstream	07080105	0.9		Y	AE	8/1/1983
Skunk River	Ames, City of; Story County, Unincorporated Areas	Approximately 1,000 feet downstream of Ken Maril Road	Approximately 700 feet upstream of West Riverside Road	07080105	7.6		Y	AE	7/1/2004
Skunk River	Ames, City of; Story, City of; Story County, Unincorporated Areas	Approximately 700 feet upstream of West Riverside Road	Confluence of Keigley Creek	07080105	4.2		Y	AE	7/1/2004
Skunk River	Story County, Unincorporated Areas	130th Street, South of the City of Story City	Approximately 2.2 miles upstream of 130th Street	07080105	2.2		Y	AE	7/1/2004
Skunk River	Story, City of; Story County, Unincorporated Areas	Approximately 2.2 miles upstream of 130th Street	Northern county boundary	07080105	4.1		Y	AE	7/1/2004
South Skunk River	Story County, Unincorporated Areas	Approximately 250 upstream of 320th Street	City of Cambridge corporate limit	07080105	0.9		Y	AE	12/1/1982
Squaw Creek	Ames. City of; Story County, Unincorporated Areas	Confluence with Skunk RIver	Approximately 1.2 miles upstream of confluence with Onion Creek	07080105	6.7		Y	AE	7/1/2004

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 (mi2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Squaw Creek	Story County, Unincorporated Areas	Approximately 1.2 miles upstream of confluence with Onion Creek	Approximately 3,100 feet upstream of West 190th Street	07080105	2.2		Y	AE	12/1/1982
Unnamed Creek	Story, City of	Confluence with Skunk River	Approximately 2,900 feet upstream	07080105	0.6		Y	AE	11/1/1978
Unnamed Creek A	Ames, City of; Story County, Unincorporated Areas	Confluence with Skunk River	U.S. Highway 69	07080105	1.5		Y	AE	4/1/1978
Unnamed Creek B	Ames, City of	Confluence with Unnamed Creek A	City of Ames corporate limit	07080105	0.5		Y	AE	4/1/1978
Walnut Creek	Story County, Unincorporated Areas	Approximately 2.7 miles upstream of mouth	Approximately 3,800 feet upstream of U.S. Highway 69	07080105	3.3		Y	AE	12/1/1982
West Branch Indian Creek	Nevada, City of; Story County, Unincorporated Areas	270th Street	Approximately 1,200 feet upstream of West T Avenue	07080105	8.1		Y	AE	3/1/1980
Worle Creek	Ames, City of; Story County, Unincorporated Areas	Confluence with Squaw Creek	County Boundary	07080105	8.0		Y	AE	4/1/1978
Worle Creek Tributary 1	Ames, City of; Story County, Unincorporated Areas	Confluence with Worle Creek	University Blvd within the City of Ames	07080105	1.9		Y	AE	7/1/2012
Worle Creek Tribuatary 2	Ames, City of; Story County, Unincorporated Areas	Confluence with Worle Creek	Approximately 900 feet upstream of South Dakota Avenue	07080105	2.1		Y	AE	7/1/2012

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 (mi2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Zone A Flooding Sources	Ames, City of; Cambridge, City of; Collins, City of; Gilbert, City of; Huxley, City of; Maxwell, City of; Mccallsburg, City of; Nevada, City of; Roland, City of; Slater, City of; Story City, City of; Story County, Unincorporated Areas; Zearing, City of	Within Story County	Within Story County	07080105, 07080106, 07080207, 07080208, 07100004, 07100008	454	N/A	N	A	10/21/2015

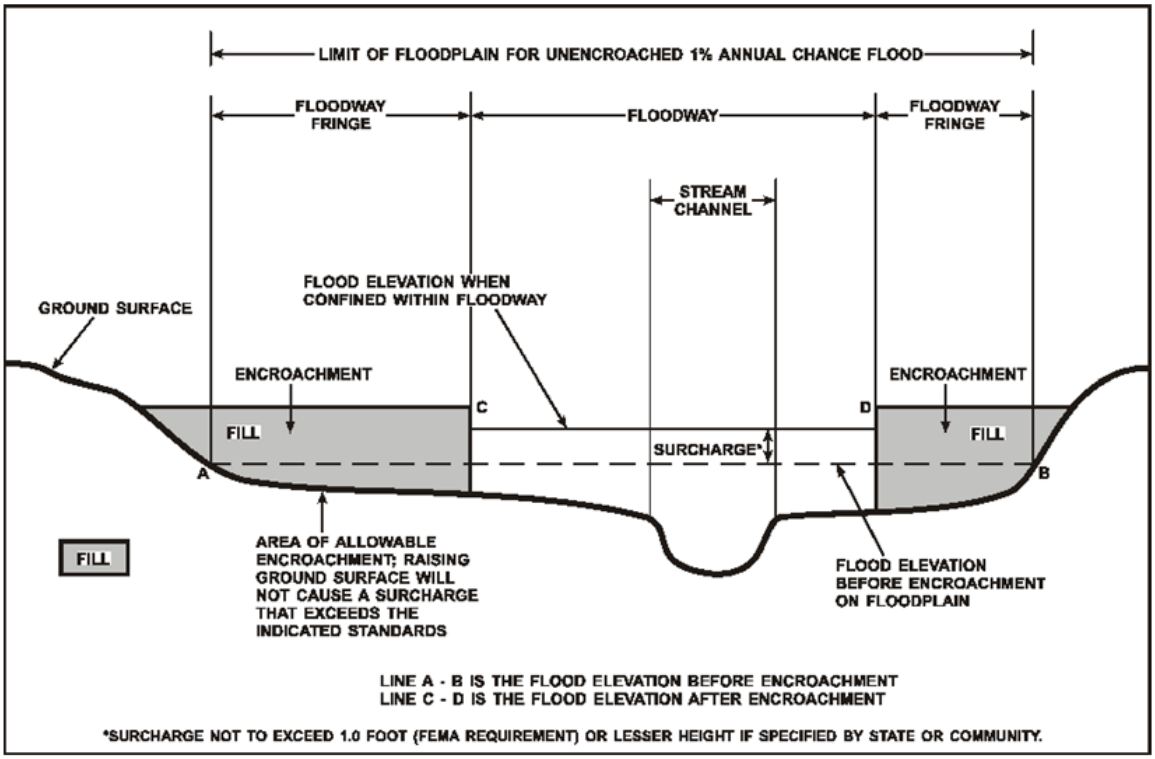
2.2 Floodways

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 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 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.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



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 , “Floodway Data.”

All floodways that were developed for this Flood Risk 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.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

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 Story County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Ames, City of	A, AE, X
Cambridge, City of	A, AE, X
Collins, City of	A, X
Colo, City of	X
Gilbert, City of	A, X
Huxley, City of	A, AE, X
Kelley, City of	X
Maxwell, City of	AE, X
McCallsburg, City of	A, X
Nevada, City of	A, AE, X
Roland, City of	A, AE, X
Slater, City of	A, AE, X

Table 3: Flood Zone Designations by Community (continued)

Community	Flood Zone(s)
Story City, City of	A, AE, X
Story County, Unincorporated Areas	A, AE, X
Zearing, City of	A, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 4 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 miles)
Lake Red Rock	07100008	Des Moines River	Lake Red Rock is Iowa's largest lake and is located on the Des Moines River.	2,443
Middle Des Moines	07100004	Des Moines River	This watershed is drained by the Des Moines River and spans across Boone, Buena Vista, Calhoun, Clay, Dallas, Greene, Hamilton, Humboldt, Palo Alto, Pocahontas, Polk, Story, Webster and Wright counties.	1,725
Middle Iowa	07080208	Iowa River	Watershed spans across Story, Linn, Benton, Jasper, Johnson, Tama, Poweshiek, Iowa, Marshall, and Grundy counties.	1,657
North Skunk	07080106	North Skunk River	Watershed spans across Story, Mahaska, Jasper, Poweshiek, Marshall and Keokuk counties.	872
South Skunk	07080105	South Skunk River	Watershed spans across 13 counties with the majority of it located in Hamilton, Story and Jasper counties.	1,843

Table 4: Basin Characteristics (continued)

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Upper Iowa	07080207	Iowa River	Located in the prairie pothold region in the Des Moines Lobe with most of the subbasin located in Hardin, Wright and Hancock counties.	1,455

4.2 Principal Flood Problems

Table 5: Principal Flood Problems contains a description of the principal flood problems that have been noted for Story County by flooding source.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
All Flooding Sources	Flooding usually occurs during the spring and summer months of the year. The area is particularly susceptible to flooding caused by a combination of rainfall and snowmelt.
Skunk River	Floods on the Skunk River are caused primarily by intense rainfall with or without snowmelt.

Table 6: Historic Flooding Elevations contains information about historic flood elevations in the communities within Story County.

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
South Skunk River	Below Squaw Creek near Ames, IA	13	1944	7	USGS gage
South Skunk River	Below Squaw Creek near Ames, IA	13.2	1960	6	USGS gage
South Skunk River	Below Squaw Creek near Ames, IA	25.57	1975	37	USGS gage
South Skunk River	Near Ames, IA	13.9	1944	40	USGS gage

Table 6: Historic Flooding Elevations (continued)

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
South Skunk River	Near Ames, IA	11.95	1947	15	USGS gage
South Skunk River	Near Ames, IA	13.66	1954	70	USGS gage
South Skunk River	Near Ames, IA	10.33	1960	11	USGS gage
South Skunk River	Near Ames, IA	9.6	1974	9	USGS gage
Squaw Creek	At Ames, IA	14	1975	400	USGS gage

4.3 Non-Levee Flood Protection Measures

Table 7: Non-Levee Flood Protection Measures contains information about non-levee flood protection measures within Story County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 7: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
South Skunk River	N/A	Channel improvement	Outside the eastern corporate limits of Cambridge	The old South Skunk River channel which passed through the City of Cambridge has been filled in and a new straight channel was constructed outside the eastern corporate limits.

4.4 Levees

For purposes of the NFIP, FEMA only recognizes levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with comprehensive floodplain management criteria. The Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) describes the information needed for FEMA to determine if a levee system reduces the risk from the 1% annual chance flood. This information must be supplied to FEMA by the community or other party when a flood risk study or restudy is conducted, when FIRMs are revised, or upon FEMA request. FEMA reviews the information for the purpose of establishing the appropriate FIRM flood zone.

Levee systems that are determined to reduce the risk from the 1% annual chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA is awaiting data and/or documentation to demonstrate compliance with Section 65.10.

These levee systems are referred to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee's certification status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Figure 3 and in Table 8: Levees. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system not longer meets Section 65.10, FEMA will de-accredit the levee system and issue an effective FIRM showing the levee-impacted area as a SFHA.

FEMA coordinates its programs with USACE, who may inspect, maintain, and repair levee systems. The USACE has authority under Public Law 84-99 to supplement local efforts to repair flood control projects that are damaged by floods. Like FEMA, the USACE provides a program to allow public sponsors or operators to address levee system maintenance deficiencies. Failure to do so within the required timeframe results in the levee system being placed in an inactive status in the USACE Rehabilitation and Inspection Program. Levee systems in an inactive status are ineligible for rehabilitation assistance under Public Law 84-99.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levees that exist within Story County. Table 8: Levees, lists all accredited levees, PALs, and de-accredited levees shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levees identified as PALs in the table are labeled on the FIRM to indicate their provisional status.

Please note that the information presented in Table 8: Levees is subject to change at any time. For that reason, the latest information regarding any USACE structure presented in the table should be obtained by contacting USACE and accessing the USACE National Levee Database. For levees owned and/or operated by someone other than the USACE, contact the local community shown in Table 30.

Table 8: Levees

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
Cambridge, City of; Story County, Unincorporated Areas	Ballard Creek	Right Bank	*	No	1705000465	No	19169C0291F 19169C0293F 19169C0294F

Table 8: Levees (continued)

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
Story County, Unincorporated Areas	Indian Creek	Left Bank	*	No	1705000466	No	19169C0435F
Story County, Unincorporated Areas	Indian Creek	Right Bank	*	No	1705700466	No	19169C0435F

*Data not available

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.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table , “Incorporated Letters of Map Change”, which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, “FIRM Revisions.”

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 12: Summary of Hydroglogic and Hydraulic Analyses. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 9: Summary of Discharges. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10: Summary of Non-Coastal Stillwater Elevations. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 4.) Stream gage information is provided in Table 11: Stream Gage Information used to Determine Discharges.

Table 9: 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	0.2% Annual Chance
Ballard Creek	At Interstate Highway 55	21.1	1,160	*	1,950	2,340	3,380
Bear Creek	Mouth at Skunk Creek	31.8	1,990	*	3,470	4,200	6,200
Bear Creek	Above Roland	20.0	1,400	*	2,550	3,100	4,000
Clear Creek	At mouth	9.6	1,360	*	2,090	2,410	3,140
College Creek	At mouth	3.4	76	1,210	1,605	2,035	3,000
College Creek	Approximately 850 feet downstream of State Avenue	2.9	685	1,080	1,430	1,770	2,520
College Creek	Approximately 2,400 feet upstream of State Avenue	2.1	325	500	650	785	1,100
College Creek	At South Dakota Avenue	1.8	160	240	310	390	550
Fourmile Creek	At County Boundary	4.7	900	*	1,470	1,750	2,480
Indian Creek	At County Boundary	219	7,150	*	11,900	14,100	20,200
Keighley Branch	Mouth at Squaw Creek	46.2	1,340	*	2,110	2,480	3,410
Lateral A	Mouth at Drainage Ditch 13	2.8	1,040	*	2,010	2,530	4,020
Long Dick Creek	Mouth at Skunk Creek	33.4	1,600	*	2,740	3,310	4,860
Onion Creek	Mouth at Squaw Creek	19.6	1,900	*	2,900	3,300	4,330

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Rock Creek	Mouth at Indian Creek	11.5	2,280	*	4,170	5,120	7,800
Rock Creek Tributary	Mouth at Rock Creek	2.6	1,220	*	2,370	2,990	4,750
Rock Creek Tributary	Below Squaw Creek (Ames Study)	556	1,270	*	19,700	23,000	31,400
Rock Creek Tributary	Above Squaw Creek (Ames Study)	315	6,280	*	9,000	10,100	12,600
Rock Creek Tributary	At gage station above City of Ames (County Study)	315	5,930	*	8,150	8,990	10,700
Rock Creek Tributary	Below confluence of Long Dick Creek	218	4,910	*	6,840	7,560	9,560
Rock Creek Tributary	At Story City	185	4,410	*	6,145	6,880	8,590
South Skunk River	Northeast 158th Avenue	651	8,240	*	12,600	14,600	19,000
South Skunk River	Above confluence of Ballard Creek	612	7,700	*	11,750	13,650	17,700
Squaw Creek	Lincolnway Gage (Ames Study)	204	7,570	*	13,700	17,000	26,300
Squaw Creek	Downstream of confluence of Onion Creek (County Study)	192	5,140	*	7,380	8,310	10,400
Unnamed Creek	At mouth	0.5	320	*	800	1,000	1,500

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Unnamed Creek A	At mouth	2.5	620	*	910	1,060	1,370
Unnamed Creek A	Just below the confluence of Unnamed Creek B	2.3	570	*	830	960	1,250
Unnamed Creek A	Just above the confluence of Unnamed Creek B	1.1	295	*	415	475	600
Unnamed Creek A	At Jewel Drive	1.0	260	*	360	415	525
Unnamed Creek A	At U.S. Highway 69/ South Duty Avenue	0.9	200	*	280	320	400
Unnamed Creek B	At mouth	1.2	285	*	420	490	650
Unnamed Creek B	Approximately 350 feet above mouth	1.0	210	*	310	365	490
Unnamed Creek B	At U.S. Highway 69	1.0	190	*	285	335	450
Walnut Creek	At downstream limit of detailed study	16.0	660	*	1,060	1,260	1,760
West Branch Indian Creek	At road crossing, south edge of Section 30, Nevada Township	43.0	2,210	*	3,750	4,570	6,800
Worle Creek	At mouth	16.0	1,680	2,340	2,910	3,530	4,720

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Worle Creek	Just downstream of confluence with Worle Creek Tributary 1	15.8	1,670	2,330	2,900	3,520	4,700
Worle Creek	At South 16th Street	13.6	1,530	2,130	2,640	3,200	4,260
Worle Creek	At Elwood Drive	13.0	1,510	2,100	2,620	3,170	4,210
Worle Creek	At U.S. Highway 30	12.0	1,450	2,020	2,510	3,030	4,040
Worle Creek	Just downstream of confluence with Worle Creek Tributary 2	11.6	1,440	2,010	2,490	3,010	4,010
Worle Creek	At 510th Avenue	7.6	1,100	1,520	1,880	2,260	2,990
Worle Creek	At 500th	6.2	950	1,310	1,620	1,950	2,560
Worle Creek Tributary 1	At mouth	2.2	520	700	860	1,010	1,330
Worle Creek Tributary 1	At U.S. Highway 30	2.1	500	680	830	980	1,300
Worle Creek Tributary 1	At approximately 1,400 feet downstream of Elwood Drive	1.7	390	530	650	780	1,030
Worle Creek Tributary 1	At Elwood Drive	0.9	230	310	390	460	610
Worle Creek Tributary 2	At mouth	3.6	400	550	680	810	1,070

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Worle Creek Tributary 2	At approximately 0.7 mile upstream of confluence with Worle Creek	3.2	360	490	600	720	950
Worle Creek Tributary 2	At approximately 900 feet upstream of 510th	2.9	320	440	540	650	860

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this Flood Risk Project]

Table 10: Summary of Non-Coastal Stillwater Elevations

[Not Applicable to this Flood Risk Project]

Table 11: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Fourmile Creek	05485640	USGS	Fourmile Creek at Des Moines, IA	88	06/20/1972	08/11/2010
Indian Creek	05471200	USGS	Indian Creek near Story City, IA	18	05/20/1944	04/15/2012
Keigley Branch	05469990	USGS	Keigley Branch near Story City, IA	31	06/12/1966	11/30/2011
South Skunk River	05470000	USGS	South Skunk River near Ames, IA	209	09/17/1921	05/03/2012
South Skunk River	05471000	USGS	South Skunk River below Squaw Creek near Ames, IA	556	05/19/1944	04/14/2012
South Skunk River	05471050	USGS	South Skunk River at Colfax, IA	1,632	07/01/1986	04/15/2012
South Skunk River	05471500	USGS	South Skunk River near Oskaloosa, IA	276	05/01/1944	04/16/2012
Squaw Creek	05470500	USGS	Squaw Creek at Ames, IA	316	06/04/1918	04/14/2012
Squaw Creek	05471040	USGS	Squaw Creek near Colfax, IA	801	05/24/1996	05/12/2005
Walnut Creek	05452200	USGS	Walnut Creek near Hartwich, IA	70	05/31/1947	05/27/2013

Table 11: Stream Gage Information used to Determine Discharges (continued)

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Walnut Creek	05487540	USGS	Walnut Creek near Prairie City, IA	7	05/24/1996	05/12/2005
Walnut Creek	05487550	USGS	Walnut Creek near Vandalia, IA	20	05/09/1995	05/13/2005

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 in Table , “Floodway Data.”

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 12: Summary of Hydroglogic and Hydraulic Analyses. 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 12: Summary of Hydroglogic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Ballard Creek	Approximately 500 feet downstream of Interstate Highway 35	Approximately 1.5 miles upstream of U.S. Highway 69	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Bear Creek	Approximately 600 feet downstream of Interstate Highway 35	City of Roland southern corporate limit	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Bear Creek	City of Roland northern corporate limit	Approximately 2.0 miles upstream of the City of Roland corporate limit	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Clear Creek	Mouth at Squaw Creek	City of Ames corporate limit	Regional Analysis	HEC-2 Step backwater	4/1/1978	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
College Creek	Approximately 100 feet downstream of South Dakoata Avenue	Approximately 3,860 feet downstream of South Dakota Avenue	Regional Analysis	HEC-2 Step backwater	4/1/1978	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Four Mile Creek	County Boundary	City of Slater corporate limit	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Indian Creek	County Boundary	Approximately 5.3 miles upstream	T-Year Magnitude Regionalized Methods	Slope-Area Method	8/1/1983	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Keigley Creek	Mouth at Skunk River	Approximately 2.6 miles upstream	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Lateral A	Approximately 4,000 feet upstream of the mouth	Approximately 1.9 miles upstream	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Long Dick Creek	Mouth at Skunk River	Approximately 3.6 miles upstream	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Onion Creek	Mouth at Squaw Creek	Approximately 2,000 feet downstream of the county boundary	Regional Analysis	HEC-2 Step backwater	4/1/1978	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Rock Creek	Mouth at Indian Creek	Approximately 2.9 mles upstream	T-Year Magnitude Regionalized Methods	Slope-Area Method	8/1/1983	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Rock Creek Tributary	City of Maxwell corporate limit	Approximately 3,000 feet upstream	T-Year Magnitude Regionalized Methods	Slope-Area Method	8/1/1983	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Skunk River	Approximately 1,000 feet downstream of Ken Maril Road	Approximately 700 feet upstream of West Riverside Road	USACE Bulletin 17B	HEC-2 Step backwater	7/1/2004	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Skunk River	Approximately 700 feet upstream of West Riverside Road	Confluence of Keigley Creek	USACE Bulletin 17B	HEC-2 Step backwater	7/1/2004	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Skunk River	130th Street, South of the City of Story City	Approximately 2.2 miles upstream of 130th Street	USACE Bulletin 17B	HEC-2 Step backwater	7/1/2004	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Skunk River	Approximately 2.2 miles upstream of 130th Street	Northern county boundary	USACE Bulletin 17B	HEC-2 Step backwater	7/1/2004	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
South Skunk River	Approximately 250 upstream of 320th Street	City of Cambridge corporate limit	Extrapolated from Drainage Area	Slope-Area Method	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Squaw Creek	Confluence with Skunk RIver	Approximately 3,100 feet upstream of West 190th Street	USACE Bulletin 17B	HEC-2 Step backwater	7/1/2004	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Squaw Creek	Approximately 1.2 miles upstream of confluence with Onion Creek	Approximately 3,100 feet upstream of West 190th Street	Gage Analysis	HEC-2	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Unnamed Creek	Confluence with Skunk River	Approximately 2,900 feet upstream	USACE Bulletin 17B	HEC-2 Step backwater	11/1/1978	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Unnamed Creek A	Confluence with Skunk River	U.S. Highway 69	NRCS TR-20	HEC-2 Step backwater	4/1/1978	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Unnamed Creek B	Confluence with Unnamed Creek A	City of Ames corporate limit	NRCS TR-20	HEC-2 Step backwater	4/1/1978	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Walnut Creek	Approximately 2.7 miles upstream of mouth	Approximately 3,800 feet upstream of U.S. Highway 69	T-Year Magnitude Regionalized Methods	HEC-2 Step backwater	12/1/1982	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
West Branch Indian Creek	270th Street	Approximately 1,200 feet upstream of West T Avenue	T-Year Magnitude Regionalized Methods	Slope-Area Method	3/1/1980	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Worle Creek	Confluence with Squaw Creek	County Boundary	Regional Analysis	HEC-2 Step backwater	4/1/1978	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Worle Creek Tributary 1	Confluence with Worle Creek	University Blvd within the City of Ames	HEC-HMS v3.5	HEC-RAS 4.1.0	7/1/2012	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Worle Creek Tribuatary 2	Confluence with Worle Creek	Approximately 900 feet upstream of South Dakota Avenue	HEC-HMS v3.5	HEC-RAS 4.1.0	7/1/2012	AE w/ Floodway	Flood hazard information was redelineated based on newly developed topographic data in this revision. No new flood hazard analysis was performed.
Zone A Flooding Sources	Within Story County	Within Story County	Iowa Regression Equations	HEC-RAS 4.0.0	10/21/2015	A	Peak flood discharges were calculated using USGS developed regionally-based regression equations in 1987 (LARA, O.G. 1987) and 2001 (Eash, D.A. 2001) to calculate annual exceedance discharges in Iowa streams.

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Ballard Creek	0.030-0.040	0.060-0.150
Bear Creek	0.030-0.040	0.060-0.150
Clear Creek	0.040-0.050	0.050-0.085
College Creek	0.040	0.050-0.100
Fourmile Creek	0.030-0.040	0.060-0.150
Indian Creek	0.030-0.040	0.060-0.150
Keigley Creek	0.030-0.040	0.060-0.150
Lateral A Creek	0.030-0.040	0.060-0.150
Long Dick Creek	0.030-0.040	0.060-0.150
Onion Creek	0.040-0.050	0.050-0.085
Rock Creek	0.030-0.040	0.060-0.150
Rock Creek Tributary	0.030-0.040	0.060-0.150
Skunk River	0.030-0.040	0.045-0.090
South Skunk River	0.040-0.050	0.032-0.045
Squaw Creek	0.030-0.040	0.060-0.150
Unnamed Creek	0.030-0.040	0.045-0.090
Unnamed Creek A	0.040-0.050	0.050-0.085
Unnamed Creek B	0.040-0.050	0.050-0.085
Walnut Creek	0.030-0.040	0.060-0.150
West Branch Indian Creek	0.035-0.040	0.035-0.100
Worle Creek	0.040-0.050	0.065-0.110
Worle Creek Tributary 1	0.038-0.045	0.030-0.150
Worle Creek Tributary 2	0.045	0.040-0.110

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 14: Summary of Coastal Analyses
[Not Applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not Applicable to this Flood Risk Project]

Table 15: Tide Gage Analysis Specifics

[Not Applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 16: Coastal Transect Parameters

[Not Applicable to this Flood Risk Project]

Figure 9: Transect Location Map

[Not Applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Summary of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

Table 18: Results of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

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.

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 visit the NGS website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Story County are provided in Table 19.

Table 19: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Ames East	NE	42.125	-93.500	+0.0962
Ames West	NE	42.125	-93.625	+0.0826
Collins	NE	42.000	-93.250	+0.1183
Colo	NE	42.125	-93.250	+0.0978
Elkhart	NE	41.875	-93.500	+0.0832
Polk City	NE	41.875	-93.625	+0.1615
Huxley	NE	42.000	-93.500	+0.1245
Loring	NE	41.875	-93.375	+0.0926
Maxwell	NE	42.000	-93.375	+0.1213
Mingo	NE	41.875	-93.250	+0.1060
Nevade	NE	42.125	-93.375	+0.1014
Slater	NE	42.000	-93.625	+0.1334
Average Conversion from NGVD29 to NAVD88 = +0.1 feet				

Table 20: Stream-Based Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

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 Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 21.

Table 21: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Digital Orthophoto	Iowa Geological and Water Survey, Department of Natural Resources	2009	*	Digital orthoimagery
Political boundaries	U.S. Department of Commerce, U.S. Census Bureau, Geography Division	2010	*	Municipal and county boundaries
Public Land Survey System (PLSS)	Iowa Department of Natural Resources	1998	1:24,000	PLSS data of Iowa
Transportation Features	Iowa Department of Transportation	2010	1:5,000	Road centerlines
Transportation Features	U.S. Department of Commerce, U.S. Census Bureau, Geography Division	2016	1:24,000	TIGER Line railroad data

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 the topographic

elevation data described in Table . For each coastal flooding source studied as part of this FIS Report, the mapped floodplain boundaries on the FIRM have been delineated using the flood and wave elevations determined at each transect; between transects, boundaries were delineated using land use and land cover data, the topographic elevation data described in Table 22, and knowledge of coastal flood processes. In ponding areas, flood elevations were determined at each junction of the model; between junctions, boundaries were interpolated using the topographic elevation data described in Table 22.

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 23, “Floodway Data.”

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Story County	All flooding sources	Light Detection and Ranging data (LiDAR)	18.0 cm RMSEz	1 meter at 95% confidence level	IDNR 2010

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. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

Table 23: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	13,020	55	390	6.0	878.2	878.2	879.2	1.0
B	13,440	51	267	8.7	879.9	879.9	880.6	0.7
C	13,590	51	281	8.3	880.3	880.3	880.8	0.5
D	14,550	83	247	9.5	882.6	882.6	882.6	0.0
E	16,350	82	375	5.3	892.3	892.3	892.8	0.5
F	16,750	61	281	7.0	893.5	893.5	894.1	0.6
G	16,820	62	283	7.0	893.5	893.5	894.1	0.6
H	17,170	44	201	9.8	896.2	896.2	896.3	0.1
I	19,620	68	397	5.0	906.3	906.3	907.1	0.8
J	19,920	66	299	6.6	906.9	906.9	907.9	1.0
K	19,970	67	303	6.5	907.0	907.0	907.9	0.9
L	20,295	104	280	7.0	909.1	909.1	909.4	0.3
M	22,935	128	530	3.7	920.3	920.3	920.9	0.6
N	25,335	149	292	6.7	929.3	929.3	929.8	0.5
O	25,485	78	282	5.3	930.0	930.0	930.5	0.5
P	25,535	101	414	4.8	932.1	932.1	932.1	0.0
Q	25,945	123	402	4.9	932.8	932.8	933.2	0.4
R	27,285	95	213	9.2	936.5	936.5	936.2	0.0
S	28,625	105	590	3.3	943.0	943.0	943.9	0.9
T	30,005	61	353	5.6	946.7	946.7	947.1	0.4
U	30,185	40	222	8.9	947.1	947.1	947.6	0.5
V	30,335	40	341	5.8	950.5	950.5	950.6	0.1
W	30,675	111	610	3.2	951.4	951.4	951.5	0.1
X	32,075	139	276	7.1	953.1	953.1	953.4	0.3

[1] Stream distance in feet above confluence with South Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BALLARD CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Y	33,475	76	245	8.0	963.9	963.9	963.9	0.0
Z	35,575	36	282	7.0	974.6	974.6	975.6	1.0
AA	37,675	71	406	4.9	983.2	983.2	983.9	0.7
AB	37,845	68	240	8.2	983.6	983.6	984.4	0.8
AC	37,920	62	247	8.0	983.8	983.8	984.6	0.8

[1] Stream distance in feet above confluence with South Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BALLARD CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,000	250	1,073	3.9	932.1	932.1	932.9	0.8
B	4,500	190	774	5.4	933.1	933.1	933.9	0.8
C	4,700	190	797	5.3	933.4	933.4	934.1	0.7
D	4,950	222	939	4.5	934.9	934.9	935.0	0.1
E	6,150	98	641	6.5	937.8	937.8	938.7	0.9
F	7,350	96	653	6.4	943.3	943.3	944.0	0.7
G	8,540	199	1,230	3.4	946.1	946.1	947.0	0.9
H	10,110	84	546	7.7	949.4	949.4	950.2	0.8
I	12,730	194	1,043	4.0	959.7	959.7	960.5	0.8
J	13,080	67	429	9.8	960.8	960.8	961.5	0.7
K	13,160	67	430	9.8	961.3	961.3	961.8	0.5
L	13,610	219	962	4.4	965.4	965.4	965.5	0.1
M	14,770	153	761	5.5	969.8	969.8	970.4	0.6
N	15,430	108	507	8.3	973.9	973.9	974.3	0.4
O	17,150	372	1,824	2.3	978.2	978.2	978.7	0.5
P	18,950	183	671	6.3	980.6	980.6	981.1	0.5
Q	19,100	119	512	8.2	980.9	980.9	981.7	0.8
R	19,150	199	394	10.7	981.0	981.0	981.7	0.7
S	19,710	478	2,337	1.8	984.0	984.0	984.4	0.4
T	21,430	149	948	4.4	984.5	984.5	985.1	0.6
U	22,430	100	597	7.0	986.8	986.8	987.7	0.9
V	24,830	169	1,024	4.1	992.9	992.9	993.9	1.0
W	25,050	127	607	6.9	992.9	992.9	993.9	1.0
X	25,100	65	611	6.9	994.0	994.0	994.0	0.0
Y	25,280	169	1,233	3.4	994.7	994.7	994.7	0.0
Z	28,680	266	1,023	4.1	998.8	998.8	999.8	1.0

[1] Stream distance in feet above confluence with South Skunk River

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AA	30,760	143	814	5.2	1,006.1	1,006.1	1,006.6	0.5
AB	30,910	110	640	6.6	1,006.7	1,006.7	1,007.1	0.4
AC	31,510	110	643	6.5	1,009.2	1,009.2	1,009.7	0.5
AD	40,280	267	1,054	2.9	1,019.4	1,019.4	1,020.2	0.8
AE	43,480	212	860	3.6	1,026.6	1,026.6	1,027.5	0.9
AF	43,720	82	341	9.1	1,027.2	1,027.2	1,028.1	0.9
AG	43,750	73	377	8.2	1,028.0	1,028.0	1,028.9	0.9
AH	43,990	245	1,724	1.8	1,029.9	1,029.9	1,030.4	0.5
AI	46,150	212	864	3.6	1,031.1	1,031.1	1,031.8	0.7
AJ	47,650	307	1,109	2.8	1,034.1	1,034.1	1,034.9	0.8
AK	47,890	367	966	3.2	1,034.3	1,034.3	1,035.2	0.9
AL	47,920	367	1,326	2.3	1,035.8	1,035.8	1,036.3	0.5
AM	48,520	211	1,030	3.0	1,036.7	1,036.7	1,037.0	0.3

[1] Stream distance in feet above confluence with South Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BEAR CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	158	300	787	3.1	906.9	902.6[2]	902.6[2]	0.0
B	528	235	393	6.1	906.9	903.3[2]	903.3[2]	0.0
C	2,429	223	2,113	1.1	916.5	916.5	916.5	0.0
D	3,168	214	1,667	1.4	916.5	916.5	916.5	0.0
E	3,854	200	1,113	2.2	916.7	916.7	916.7	0.0
F	5,069	252	1,055	2.3	918.7	918.7	918.8	0.1
G	8,237	231	725	3.3	928.2	928.2	928.3	0.1
H	10,243	252	796	3.0	935.8	935.8	935.9	0.1
I	12,461	225	725	3.3	942.9	942.9	942.9	0.0
J	14,203	162	528	4.6	949.1	949.1	949.1	0.0
K	15,418	100	355	6.8	953.6	953.6	953.6	0.0
L	15,734	213	723	3.3	955.4	955.4	955.4	0.0
M	16,685	199	802	3.0	958.6	958.6	958.6	0.0
N	17,477	151	454	5.3	959.7	959.7	959.7	0.0
O	18,216	145	402	6.0	962.4	962.4	962.4	0.0
P	19,061	156	714	3.4	965.4	965.4	965.4	0.0
Q	20,434	113	431	5.6	969.3	969.3	969.3	0.0
R	21,859	260	794	3.0	973.6	973.6	973.6	0.0

[1] Stream distance in feet above confluence with Squaw Creek
[2] Elevations without considering backwater effects from Squaw Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CLEAR CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,566	57	304	6.7	902.7	902.7	902.8	0.1
B	3,066	124	1,210	1.7	914.2	914.2	914.2	0.0
C	3,718	104	1,087	1.9	914.3	914.3	914.7	0.4
D	5,094	53	300	5.9	920.0	920.0	920.0	0.0
E	6,947	85	488	3.6	933.4	933.4	933.4	0.0
F	7,974	120	1,446	1.2	946.8	946.8	947.7	0.9
G	11,962	45	130	6.0	957.1	957.1	957.1	0.0
H	12,947	33	79	4.9	964.3	964.3	964.3	0.0
I	14,447	40	80	4.9	973.2	973.2	973.2	0.0
J	16,559	32	76	5.1	985.1	985.1	985.1	0.0
K	18,107	34	55	7.1	995.8	995.8	995.8	0.0
L	20,447	49	102	3.8	1,007.5	1,007.5	1,007.5	0.0
M	22,167	38	78	5.0	1,013.5	1,013.5	1,013.5	0.0

[1] Stream distance in feet above confluence with Squaw Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: COLLEGE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	163,340	225	756	2.3	1,005.5	1,005.5	1,006.3	0.8
B	165,070	200	656	2.7	1,008.0	1,008.0	1,008.2	0.2
C	166,860	200	687	2.5	1,008.9	1,008.9	1,009.6	0.7
D	167,200	249	487	3.6	1,009.8	1,009.8	1,010.3	0.5

[1] Stream distance in feet above confluence with Des Moines River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FOURMILE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	0	1,143[2]	5,710	2.5	855.1	855.1	856.1	1.0
B	2,000	1,894	5,471	1.5	856.9	856.9	857.9	1.0
C	4.400	1,555	7,132	2.0	858.3	858.3	859.2	0.9
D	6.960	2,196	8,827	1.6	860.1	860.1	861.0	0.9
E	8,160	1,623	6,944	2.0	861.1	861.1	862.0	0.9
F	9,160	1,980	7,840	1.8	862.0	862.0	862.9	0.9
G	12,200	408	3,156	4.3	865.2	865.2	866.1	0.9
H	12,450	210	1,670	8.2	865.5	865.5	866.5	1.0
I	12,490	166	1,713	8.0	865.9	865.9	866.7	0.8
J	12,810	907	5,944	2.3	867.4	867.4	867.9	0.5
K	13,610	916	7,968	1.7	868.7	868.7	869.2	0.5
L	13,870	662	5,452	2.5	868.8	868.8	869.3	0.5
M	14,010	273	2,634	5.2	868.8	868.8	869.5	0.5
N	14,050	269	2,681	5.1	868.9	868.9	870.5	0.6
O	14,450	548	5,222	2.6	869.9	869.9	871.1	0.6
P	15,750	1,739	12,144	1.1	870.4	870.4	871.1	0.7
Q	15,900	1,741	12,182	1.1	870.4	870.4	871.1	0.7
R	15,950	1.656	6,292	2.2	870.4	870.4	871.2	0.7
S	16,075	1,625	12,415	2.2	870.5	870.5	871.9	0.7
T	19,075	1,236	6,163	2.1	871.2	871.2	873.3	0.7
U	20,735	1,307	6,623	2.0	872.9	872.9	873.5	0.4
V	21,085	1,326	6,928	2.0	873.1	873.1	874.6	0.4
W	21,125	1,326	8,273	1.7	874.3	874.3	874.6	0.3
X	21,365	1,229	7,770	1.8	874.4	874.4	874.7	0.3
Y	25,105	1,301	6,651	2.1	876.1	876.1	876.9	0.8

[1] Stream distance in feet above county boundary
[2] This width extends beyond county boundary

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: INDIAN CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Z	27,605	652	5,137	2.7	878.4	878.4	879.3	0.9
AA	27,905	819	6,434	2.1	878.7	878.7	879.7	1.0
AB	27,945	819	6,843	2.0	879.4	879.4	880.1	0.7
AC	28,245	511	3,329	4.1	879.5	879.5	880.2	0.7

[1] Stream distance in feet above county boundary

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: INDIAN CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	155	277	1,089	2.3	926.0	921.9[2]	922.3	0.4
B	1,755	476	999	2.5	926.0	923.5[2]	923.7	0.2
C	2,515	132	356	7.0	926.0	924.2[2]	924.5	0.3
D	2,580	144	361	6.9	926.0	924.3[2]	924.6	0.3
E	2,780	450	1,158	2.1	926.0	925.6[2]	925.8	0.2
F	6,780	422	1,050	2.4	928.6	928.6	929.5	0.9
G	7,440	242	717	3.5	929.4	929.4	930.4	1.0
H	11,880	165	588	4.2	937.8	937.8	938.1	0.3
I	12,800	137	461	5.4	939.5	939.5	940.2	0.7
J	13,050	296	936	2.6	940.4	940.4	941.1	0.7
K	13,100	266	874	2.8	940.7	940.7	941.3	0.6
L	13,300	153	614	4.0	941.0	941.0	941.4	0.4

[1] Stream distance in feet above confluence with Skunk River
[2] Elevations without considering backwater effect from Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: KEIGLEY CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,060	40	270	9.4	887.4	887.4	888.4	1.0
B	5,010	56	441	5.7	901.2	901.2	901.2	0.0
C	5,600	46	311	8.1	902.9	902.9	903.4	0.5
D	6,440	107	567	4.5	910.4	910.4	910.9	0.5
E	7,340	113	737	3.4	914.6	914.6	915.6	1.0
F	8,540	43	301	8.4	919.9	919.9	920.8	0.9
G	9,740	42	632	4.0	927.1	927.1	928.0	0.9

[1] Stream distance in feet above confluence with 07080105001051

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LATERAL A

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	200	199	753	4.4	960.1	955.7[2]	956.6	0.9
B	3,320	297	945	3.5	963.5	963.5	963.5	0.0
C	3,560	168	615	5.4	963.9	963.9	963.9	0.0
D	3,750	75	525	6.3	965.1	965.1	965.1	0.0
E	3,920	357	1,975	1.7	967.1	967.1	967.1	0.0
F	7,110	111	528	6.3	968.7	968.7	969.3	0.6
G	10,310	210	952	3.5	977.1	977.1	977.5	0.4
H	16,320	277	1,106	3.0	987.2	987.2	988.0	0.8
I	18,020	116	675	4.9	991.3	991.3	992.1	0.8
J	18,220	141	781	4.2	991.7	991.7	992.6	0.9

[1] Stream distance in feet above confluence with Skunk River
[2] Elevatuions without considering backwater effect from Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LONG DICK CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,380	210	832	4.0	910.7	910.7	910.9	0.2
B	3,326	143	585	5.7	913.5	913.5	913.9	0.4
C	4,488	230	918	3.6	917.8	917.8	917.9	0.1
D	5,438	118	335	9.9	921.3	921.3	921.6	0.3
E	6,580	230	906	3.7	927.4	927.4	927.7	0.3
F	7,500	204	833	4.0	929.1	929.1	929.8	0.7
G	8,260	220	878	3.8	930.5	930.5	931.5	1.0
H	8,800	120	671	5.0	932.1	932.1	932.5	0.4
I	9,030	115	827	4.0	935.6	935.6	935.6	0.0
J	9,980	119	785	4.2	936.0	936.0	936.6	0.6
K	10,830	125	910	3.7	936.8	936.8	937.7	0.9
L	11,920	95	482	6.9	939.1	939.1	939.4	0.3
M	12,710	50	621	5.4	942.2	942.2	942.8	0.6
N	13,580	74	679	4.9	944.7	944.7	945.0	0.3
O	14,500	62	471	7.1	946.8	946.8	947.5	0.7
P	15,410	105	724	4.6	949.5	949.5	950.2	0.7
Q	16,150	109	626	5.3	951.3	951.3	951.9	0.6
R	17,850	90	483	6.9	956.2	956.2	956.8	0.6
S	19,100	98	549	6.1	961.3	961.3	961.7	0.4
T	20,060	138	751	4.4	967.9	967.9	968.6	0.7
U	21,360	97	939	3.5	969.4	969.4	970.3	0.9

[1] Stream distance in feet above confluence with Squaw Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ONION CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,500	421	1,488	3.4	867.6	867.6	868.1	0.5
B	2,590	409	1,601	3.2	867.8	867.8	868.3	0.5
C	2,640	401	1,971	2.6	870.1	870.1	870.1	0.0
D	2,990	488	2,286	2.2	870.3	870.3	870.5	0.2
E	3,790	80	459	11.2	873.3	873.3	873.6	0.3
F	4,400	305	901	5.7	876.3	876.3	876.7	0.4
G	4,800	433	3,030	1.7	878.4	878.4	878.4	0.0
H	6,160	300	1,440	3.6	879.6	879.6	880.3	0.7
I	6,350	290	1,955	2.6	880.4	880.4	881.0	0.6
J	6,490	289	2,129	2.4	885.1	885.1	885.1	0.0
K	6,610	310	2,317	2.2	885.1	885.1	885.3	0.2
L	7,770	351	1,993	2.6	886.1	886.1	886.3	0.2
M	9,010	232	1,022	5.0	888.0	888.0	888.5	0.5
N	9,160	195	1,229	4.2	888.6	888.6	889.2	0.6
O	9,240	195	664	7.7	888.8	888.8	889.3	0.5
P	9,320	179	1,603	3.2	890.0	890.0	890.6	0.6
Q	11,920	128	761	6.7	894.7	894.7	895.2	0.5
R	13,020	126	939	5.5	899.0	899.0	899.3	0.3
S	15,100	109	695	7.4	904.7	904.7	905.4	0.7
T	15,330	109	795	6.4	905.6	905.6	906.3	0.7

[1] Stream distance in feet above confluence with Indian Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ROCK CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	500	217	755	4.0	872.7	872.7	872.7	0.0
B	570	217	1,564	1.9	876.4	876.4	876.4	0.0
C	950	165	967	3.1	876.5	876.5	876.5	0.0
D	2,610	122	422	7.1	879.2	879.2	879.8	0.6
E	4,230	78	339	8.8	889.1	889.1	889.1	0.0
F	4,830	115	201	14.8	897.1	897.1	897.8	0.7

[1] Stream distance in feet above confluence with Rock Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ROCK CREEK TRIBUTARY

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,176,108	441	2,917	7.6	881.8	881.8	882.3	0.5
B	1,176,700	1,740	8,340	2.8	883.2	883.2	883.5	0.3
C	1,177,500	2,805	16,995	1.4	884.3	884.3	885.0	0.7
D	1,182,025	2,712	10,966	0.9	885.7	885.1	885.9	0.8
E	1,185,050	260	1,586	6.4	887.3	886.6	887.2	0.6
F	1,187,000	281	2,097	4.8	890.6	890.1	890.3	0.2
G	1,190,800	523	1,800	5.6	892.2	892.2	892.8	0.6
H	1,194,150	1,485	3,532	2.9	894.3	894.3	894.8	0.5
I	1,199,100	1,477	2,535	4.0	897.8	897.8	898.6	0.8
J	1,203,450	695	3,820	2.6	901.9	901.9	902.4	0.5
K	1,206,770	195	1,928	4.7	905.3	905.3	906.1	0.8
L	1,207,682	117	1,704	5.3	906.1	906.1	907.0	0.9
M	1,207,967	117	1,694	5.5	906.3	906.3	907.2	0.9
N	1,210,207	303	2,526	3.6	908.0	908.0	908.6	0.6
O	1,204,283	402	1,930	4.7	912.0	912.0	912.3	0.3
P	1,216,703	289	2,282	3.9	916.0	916.0	917.0	1.0
Q	1,220,243	181	1,525	5.9	918.4	918.4	919.2	0.8
R	1,220,963	467	3,077	0.9	919.5	919.5	920.2	0.7
S	1,223,663	158	1,432	6.3	921.6	921.6	922.0	0.4
T	1,223,953	193	1,726	5.2	922.2	922.2	922.6	0.4
U	1,229,003	145	1,376	6.5	925.5	925.5	925.6	0.1
V	1,257,200	182	1,600	4.8	958.4	958.4	959.3	0.9
W	1,257,270	125	1,606	4.8	958.5	958.5	959.4	0.9
X	1,257,420	154	1,754	4.4	958.7	958.7	959.6	0.9
Y	1,258,130	252	2,442	3.1	959.4	959.4	960.2	0.8
Z	1,259,290	638	3,425	2.0	959.9	959.9	960.7	0.8

[1] Stream distance in feet above confluence with Mississippi River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SKUNK RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AA	1,269,520	226	1,693	4.1	964.5	964.5	965.3	0.8
AB	1,274,380	235	2,129	3.2	969.3	969.3	970.1	0.8
AC	1,275,510	260	1,978	3.5	970.4	970.4	971.0	0.6
AD	1,277,800	130	1,265	5.4	971.5	971.5	972.2	0.7
AE	1,278,570	330	2,412	2.9	972.3	972.3	972.8	0.5
AF	1,280,560	340	1,755	3.8	973.1	973.1	973.6	0.5
AG	1,283,760	760	5,676	1.2	975.3	975.3	976.2	0.9
AH	1,286,600	298	1,787	3.9	976.5	976.5	977.4	0.9

[1] Stream distance in feet above confluence with Mississippi River

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	110	1,497	7,073	2.1	848.8	848.8	849.8	1.0
B	862	1,588	10,712	1.3	850.6	850.6	851.6	1.0
C	2,119	1,589	7,652	1.8	850.8	850.8	851.8	1.0
D	4,661	1,355	11,230	1.2	852.9	852.9	853.5	0.6
E	5,550	1,430	10,633	1.3	853.2	853.2	853.8	0.6

[1] Stream distance in feet above corporate limits (extended)

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTH SKUNK RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4550	337	2,619	6.5	888.5	888.5	888.9	0.4
B	7250	2,030	14,264	1.2	890.9	890.9	891.5	0.6
C	8900	2,326	15,619	1.1	894.9	894.9	895.6	0.7
D	10750	1,775	12,276	1.4	895.3	895.3	896.1	0.8
E	12900	636	4,831	3.5	897.0	897.0	897.5	0.5
F	13800	559	5,253	3.2	898.1	898.1	899.0	0.9
G	14800	720	5,778	2.9	899.3	899.3	900.1	0.8
H	15700	1,577	12,297	1.4	900.9	900.9	901.6	0.7
I	17950	1,460	11,011	1.5	901.7	901.7	902.6	0.9
J	19700	1,030	8,734	1.9	903.1	903.1	903.8	0.7
K	21750	600	4,698	3.6	904.0	904.0	904.8	0.8
L	13150	1,000	8,316	2.0	906.5	906.5	907.2	0.7
M	25900	728	7,153	2.4	907.6	907.6	908.4	0.8
N	27450	850	8,794	1.9	908.4	908.4	909.2	0.8
O	28800	1,090	8,581	2.0	909.0	909.0	909.9	0.9
P	38030	804	4,840	1.7	912.0	912.0	912.9	0.9
Q	39810	649	3,656	2.3	913.2	913.2	914.1	0.9
R	41490	766	3,469	2.4	914.6	914.6	915.3	0.7
S	41965	910	5,076	1.6	914.9	914.9	915.6	0.7
T	42050	962	5,589	1.5	915.6	915.6	916.0	0.4
U	42460	958	4,879	1.7	915.7	915.7	916.1	0.4
V	46100	775	3,462	2.4	917.1	917.1	917.4	0.3
W	46310	746	3,503	2.4	917.2	917.2	917.5	0.3
X	46375	738	4,225	2.0	918.1	918.1	918.3	0.2
Y	47135	600	3,226	2.6	918.3	918.3	918.5	0.2
Z	49535	550	4,542	1.8	919.0	919.0	919.4	0.4

[1] Stream distance in feet above confluence with Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SQUAW CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	678	201	535	1.9	973.8	973.8	974.5	0.7
B	1,415	126	430	2.3	978.4	978.4	979.4	1.0
C	1,930	79	348	2.9	983.6	983.6	984.6	1.0
D	2,800	170	723	1.4	992.1	992.1	992.3	0.2

[1] Stream distance in feet above confluence with Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: UNNAMED CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,200	440	479	8.6	875.9	875.9	875.9	0.0
B	4,000	112	195	5.4	879.8	879.8	879.9	0.1
C	4,330	167	451	2.3	880.9	880.9	881.0	0.1
D	4,600	100	272	3.9	881.2	881.2	881.3	0.1
E	5,000	72	178	6.0	882.5	882.5	882.6	0.1
F	5,600	68	212	4.5	885.8	885.8	886.0	0.2
G	6,230	142	163	2.9	887.6	887.6	887.7	0.1
H	6,570	192	292	1.4	888.4	888.4	888.4	0.0
I	7,890	255	829	0.4	897.9	897.8	898.0	0.1

[1] Stream distance in feet above confluence with Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: UNNAMED CREEK A

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	350	67	161	30.0	886.8	886.8	886.8	0.0
B	905	22	54	9.0	889.3	889.3	889.3	0.0
C	1,405	66	57	6.4	893.3	893.3	893.3	0.0
D	1,825	32	123	3.0	899.3	899.3	900.0	0.7

[1] Stream distance in feet above confluence with Unnamed Creek A

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: UNNAMED CREEK B

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	14,325	69	589	2.1	889.0	889.0	889.8	0.8
B	14,805	22	246	5.1	889.1	889.1	890.0	0.9
C	14,865	49	245	5.1	889.3	889.3	890.2	0.9
D	15,265	284	1,187	1.1	890.1	890.1	890.9	0.8
E	16,065	42	329	3.8	890.4	890.4	891.1	0.7
F	18,073	50	308	4.1	893.8	893.8	894.4	0.6
G	21,393	73	273	4.6	901.6	901.6	902.2	0.6
H	21,793	54	322	3.9	902.6	902.6	903.3	0.7
I	21,853	54	323	3.9	902.8	902.8	903.4	0.6
J	22,293	73	319	3.9	903.8	903.8	904.2	0.4
K	24,893	97	376	3.4	910.6	910.6	911.4	0.8
L	25,853	44	231	5.5	914.2	914.2	914.9	0.7
M	26,563	30	238	5.3	916.9	916.9	917.4	0.5
N	26,683	57	223	5.7	917.3	917.3	917.8	0.5
O	26,803	30	243	5.2	917.7	917.7	918.2	0.5
P	30,483	43	190	6.6	928.0	928.0	928.5	0.5

[1] Stream distance in feet above confluence with South Skunk River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WALNUT CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	49,090	75	749	6.1	914.4	914.4	915.4	1.0
B	49,140	75	758	6.0	914.5	914.5	915.5	1.0
C	49,340	75	783	5.8	915.1	915.1	915.9	0.8
D	51,020	180	1,331	3.4	916.9	916.9	917.8	0.9
E	53,060	232	1,850	2.5	918.2	918.2	919.1	0.9
F	55,060	310	2,289	2.0	918.8	918.8	919.7	0.9
G	56,740	134	874	5.2	919.3	919.3	920.2	0.9
H	65,520	304	1,609	2.8	933.2	933.2	934.0	0.8
I	70,520	122	917	5.0	938.4	938.4	939.4	1.0
J	70,670	110	887	5.2	938.6	938.6	939.4	0.8
K	70,750	110	890	5.1	938.6	938.6	939.4	0.8
L	70,920	178	1,240	3.7	939.2	939.2	939.8	0.6
M	74,640	178	1,088	4.2	942.8	942.8	943.3	0.5
N	78,360	210	1,248	3.7	947.4	947.4	948.0	0.6
O	78,760	180	1,315	3.5	948.1	948.1	948.9	0.8
P	78,895	180	1,327	3.4	948.2	948.2	948.9	0.7
Q	79,115	60	488	9.4	948.3	948.3	948.9	0.6
R	80,115	237	2,056	2.2	950.5	950.5	951.4	0.9
S	81,715	199	1,418	3.2	951.0	951.0	951.8	0.8
T	82,175	188	1,268	3.6	951.2	951.2	952.0	0.8
U	82,350	84	484	9.4	951.2	951.2	952.0	0.8
V	82,410	40	497	9.2	951.2	951.2	952.0	0.8
W	82,560	210	1,712	2.7	953.1	953.1	953.7	0.6
X	83,240	256	2366	1.9	953.3	953.3	954.0	0.7
Y	83,420	78	960	4.8	953.3	953.3	954.0	0.7
Z	83,510	78	963	4.7	953.3	953.3	954.0	0.7

[1] Stream distance in feet above confluence with Indian Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WEST BRANCH INDIAN CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AA	83,810	270	2,163	2.1	953.9	953.9	954.5	0.6
AB	83,990	58	500	9.1	953.9	953.9	954.5	0.6
AC	84,040	60	528	8.7	953.9	953.9	954.5	0.6
AD	84,220	140	1,371	3.3	955.6	955.6	955.9	0.3
AE	85,095	313	2,685	1.7	955.7	955.7	956.4	0.7
AF	85,680	125	1,216	3.8	955.8	955.8	956.5	0.7
AG	85,790	87	746	6.1	955.8	955.8	956.5	0.7
AH	85,850	87	756	6.0	955.8	955.8	956.5	0.7
AI	85,950	124	1,180	3.9	956.7	956.7	957.1	0.4
AJ	86,600	250	2,151	2.1	956.9	956.9	957.6	0.7
AK	87,250	250	1,854	2.5	957.1	957.1	957.9	0.8
AL	87,891	200	1,418	3.2	957.3	957.3	958.3	1.0
AM	88,070	99	874	5.2	957.3	957.3	958.3	1.0
AN	88,120	130	435	10.5	956.9	956.9	957.7	0.8
AO	88,960	462	3,559	1.3	959.3	959.3	960.3	1.0
AP	89,760	286	2,509	1.8	959.4	959.4	960.4	1.0
AQ	90,400	322	2,391	1.9	959.6	959.6	960.6	1.0
AR	91,600	120	1,106	4.1	960.0	960.0	961.0	1.0
AS	91,800	155	871	5.2	960.1	960.1	961.0	0.9
AT	91,910	190	955	4.8	961.5	961.5	961.7	0.2
AU	91,990	160	1,317	3.5	961.6	961.6	962.2	0.6
AV	93,040	76	704	6.5	962.3	962.3	962.9	0.6
AW	93,150	64	451	10.1	962.3	962.3	962.9	0.6
AX	93,350	86	447	10.2	963.2	963.2	963.9	0.7
AY	93,600	80	960	4.8	965.5	965.5	965.9	0.4
AZ	94,800	210	2,263	2.0	966.2	966.2	966.8	0.6

[1] Stream distance in feet above confluence with Indian Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WEST BRANCH INDIAN CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
BA	94,895	210	2,269	2.0	966.2	966.2	966.9	0.7
BB	94,945	221	2,411	1.9	966.5	966.5	967.1	0.6
BC	95,025	221	2,415	1.9	966.5	966.5	967.1	0.6
BD	96,225	237	2,335	2.0	966.7	966.7	967.5	0.8

[1] Stream distance in feet above confluence with Indian Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WEST BRANCH INDIAN CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,589	188	803	4.0	896.7	896.7	896.8	0.1
B	4,567	70	471	6.8	900.2	900.2	900.3	0.1
C	6,516	83	746	4.3	905.9	905.9	906.1	0.2
D	8,308	63	614	5.2	910.7	910.7	910.9	0.2
E	9,820	67	586	5.2	914.9	914.9	915.3	0.4
F	10,785	60	554	5.5	917.8	917.8	918.0	0.2
G	11,656	65	536	5.7	919.5	919.5	919.8	0.3
H	12,789	60	512	5.9	923.7	923.7	924.3	0.6
I	14,539	109	519	5.8	927.9	927.9	928.5	0.6
J	15,004	57	413	7.3	930.0	930.0	930.5	0.5
K	16,098	58	439	6.9	934.7	934.7	935.3	0.6
L	17,188	86	544	4.3	941.4	941.4	941.4	0.0
M	18,736	68	320	7.2	944.2	944.2	945.2	1.0
N	20,509	77	464	5.0	952.3	952.3	952.6	0.3
O	22,238	46	305	7.4	958.2	958.2	958.9	0.7
P	23,962	73	420	5.4	965.0	965.0	965.5	0.5
Q	25,444	127	404	5.6	969.8	969.8	970.0	0.2
R	27,538	111	492	4.6	976.8	976.8	977.1	0.3
S	28,287	49	278	8.1	979.0	979.0	979.5	0.5
T	28,971	93	591	3.8	981.8	981.8	982.1	0.3
U	30,731	134	637	3.6	986.2	986.2	986.5	0.3
V	33,587	124	590	3.8	996.4	996.4	996.5	0.1
W	35,663	59	319	6.1	1,002.7	1,002.7	1,002.8	0.1
X	38,253	94	475	4.1	1,010.1	1,010.1	1,010.6	0.5
Y	40,751	124	541	3.6	1,014.0	1,014.0	1,014.7	0.7
Z	42,379	213	902	2.2	1,016.2	1,016.2	1,017.2	1.0

[1] Stream distance in feet above confluence with Squaw Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WORLE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,185	55	198	5.1	896.3	896.3	896.4	0.1
B	1,496	62	252	3.9	897.4	897.4	897.4	0.0
C	2,138	59	238	4.1	899.2	899.2	899.4	0.2
D	2,620	46	188	5.2	900.8	900.8	900.8	0.0
E	3,779	52	229	4.3	908.8	908.8	908.9	0.1
F	4,714	109	417	2.4	915.7	915.7	915.7	0.0
G	5,714	45	142	5.5	919.4	919.4	919.4	0.0
H	6,439	31	125	6.3	924.0	924.0	924.0	0.0
I	7,446	140	246	3.2	930.8	930.8	930.8	0.0
J	8,476	123	235	3.3	937.1	937.1	937.2	0.1
K	8,967	43	92	5.0	941.6	941.6	941.8	0.2
L	9,538	30	92	5.0	949.6	949.6	949.6	0.0
M	9,871	76	138	3.3	957.5	957.5	957.5	0.0

[1] Stream distance in feet above confluence with Worle Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WORLE CREEK TRIBUTARY 1

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	814	96	1,233	0.7	954.7	954.7	955.5	0.8
B	1,542	66	567	1.4	954.7	954.7	955.6	0.9
C	2,384	26	78	9.2	956.6	956.6	956.7	0.1
D	2,950	29	92	7.8	961.8	961.8	962.1	0.3
E	3,950	57	145	5.0	969.8	969.8	969.8	0.0
F	4,747	40	106	6.8	976.0	976.0	976.0	0.0
G	5,391	31	89	8.1	981.8	981.8	982.0	0.2
H	6,267	34	132	5.5	990.8	990.8	990.9	0.1
I	7,297	22	113	6.4	1,000.2	1,000.2	1,000.3	0.1
J	8,034	48	131	5.0	1,005.8	1,005.8	1,006.0	0.2
K	8,875	77	405	1.6	1,014.0	1,014.0	1,014.8	0.8
L	9,707	102	375	1.7	1,014.3	1,014.3	1,015.0	0.7
M	10,456	241	1,378	0.5	1,018.7	1,018.7	1,019.7	1.0
N	11,083	91	303	2.1	1,018.9	1,018.9	1,019.8	0.9

[1] Stream distance in feet above confluence with Worle Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IOWA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WORLE CREEK TRIBUTARY 2

Table 24: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 25: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this Flood Risk Project]

6.5 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 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 30, “Map Repositories”).

6.5.1 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.

To obtain an application for a LOMA, visit www.fema.gov/floodplain-management/letter-map-amendment-loma 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 www.fema.gov/online-tutorials.

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).

6.5.2 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 www.fema.gov/floodplain-management/letter-map-amendment-loma 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 www.fema.gov/online-tutorials.

6.5.3 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 www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions 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.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Story County FIRM are listed in Table 26.

Table 26: Incorporated Letters of Map Change

[Not Applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is 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 www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 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.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Story 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 27, "Community Map History." A description of each of the column headings and the source of the date 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 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 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.

- *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 PMRs 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.

The initial effective date for the Story County FIRMs in countywide format was 02/20/2008.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Ames, City of	08/02/1974	08/02/1974	04/22/1977	01/02/1981	01/15/2021 10/16/2014 02/20/2008 07/16/2004 06/16/1995
Cambridge, City of	08/16/1974	08/16/1974	07/11/1975	06/15/1981	01/15/2021 02/20/2008
Collins, City of[2]	02/20/2008	N/A	N/A	02/20/2008	01/15/2021
Colo, City of[1,2]	02/20/2008	N/A	N/A	02/20/2008	01/15/2021
Gilbert, City of	06/07/1974	06/07/0974	09/19/1975	01/01/1987	01/15/2021 02/20/2008
Huxley, City of[2]	02/20/2008	N/A	N/A	02/20/2008	01/15/2021
Kelley, City of[1,2]	02/20/2008	N/A	N/A	02/20/2008	01/15/2021
Maxwell, City of	06/28/1974	06/28/1974	12/26/1975	02/15/1984	01/15/2021 02/20/2008
McCallsburg, City of[2]	02/20/2008	N/A	N/A	02/20/2008	01/15/2021
Nevada, City of	06/28/1974	06/28/1974	01/16/1976	08/03/1981	01/15/2021 02/20/2008
Roland, City of	03/25/1977	03/25/1977	N/A	04/02/1990	01/15/2021 02/20/2008
Slater, City of[2]	02/20/2008	N/A	N/A	02/20/2008	01/15/2021
Story City, City of	05/31/1974	05/31/1974	04/09/1976	01/16/1981	01/15/2021 02/20/2008
Story County, Unincorporated Areas	11/15/1977	11/15/1977	N/A	06/01/1983	01/15/2021 10/16/2014 02/20/2008
Zearing, City of	07/19/1974	04/09/1976	N/A	05/01/1987	01/15/2021 02/20/2008

[1] No Special Flood Hazard Areas Identified
[2] This community did not have a FIRM prior to the first countywide FIRM for Story County

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 28 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 28: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Ballard Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Huxley, City of; Story County, Unincorporated Areas
Ballard Creek	12/15/1980	Stanley Consultants Inc.	H-4005	June 1977	Huxley, City of; Story County, Unincorporated Areas
Bear Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Roland, City of; Story County, Unincorporated Areas
Bear Creek	12/1982	Associated Engineers Inc.	H-4737	September 1980	Story County, Unincorporated Areas
Clear Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Ames, City of; Story County, Unincorporated Areas
Clear Creek	6/16/1995	USACE, Rock Island District	IAA-H-7-76, Project Order No. 24; IAA-H-10-77, Project order No. 2	April 1978	Ames, City of; Story County, Unincorporated Areas
College Creek	6/16/1995	USACE, Rock Island District	1AA-H-7-76, Project Order No. 24; 1AA-H-10-77, Project order No. 2	April 1978	Ames, City of; Story County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Four Mile Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	September 2013	Slater, City of; Story County, Unincoprorated Areas
Indian Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Maxwell, City of; Story County, Unincorporated Areas
Keigley Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Keigley Creek	9/1980	Associated Engineers Inc.	H-4737	December 1982	Story County, Unincorporated Areas
Lateral A	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Lateral A	9/1980	Associated Engineers Inc.	H-4737	December 1982	Story County, Unincorporated Areas
Long Dick Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Long Dick Creek	9/1980	Associated Engineers Inc.	H-4737	December 1982	Story County, Unincorporated Areas
Onion Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Onion Creek	6/16/1995	USACE, Rock Island District	No. 1AA-H-7-76, Project Order No. 24; No. 1AA-H-10-77, Project order No. 2	April 1978	Ames, City of; Story County, Unincorporated Areas
Rock Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Rock Creek	12/1/1982	Associtated Engineers Inc.	H-4737	August 1983	Maxwell, City of; Story County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Rock Creek Tributary	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Rock Creek Tributary	12/1/1982	Associtated Engineers Inc.	H-4737	August 1983	Maxwell, City of; Story County, Unincorporated Areas
Skunk River	TBD	USACE, Rock Island District; Syder & Associates	No. 1AA-H-10-77, Project Order 2	July 2004	Ames, City of; Story, City of; Story County, Unincorporated Areas
South Skunk River	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Squaw Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Squaw Creek	7/16/2004	USACE, Rock Island District, Snyder & Associates	IAA -H-7-76	July 2004	Ames. City of; Story County, Unincorporated Areas
Unnamed Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story, City of
Unnamed Creek	6/16/1995	USACE, Rock Island District	No. 1AA-H-10-77, Project order No. 2	November 1978	Story, City of
Unnamed Creek A	6/16/1995	USACE, Rock Island District	No. 1AA-H-7-76, Project Order No. 24; No. 1AA-H-10-77, Project order No. 2	April 1978	Ames, City of; Story County, Unincorporated Areas
Unnamed Creek B	6/16/1995	USACE, Rock Island District	No. 1AA-H-7-76, Project Order No. 24; No. 1AA-H-10-77, Project order No. 2	April 1978	Ames, City of; Story County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Walnut Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
Walnut Creek	9/1980	Associated Engineers Inc.	H-4737	December 1982	Story County, Unincorporated Areas
West Branch Indian Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Story County, Unincorporated Areas
West Branch Indian Creek	2/3/1981	Associated Engineers, Inc.	H-4737	March 1980	Nevada, City of; Story County, Unincorporated Areas
Worle Creek	TBD	Iowa Flood Center	ESD7385SRALST100332	April 2014	Ames, City of; Story County, Unincorporated Areas
Worle Creek	6/16/1995	AMEC Environment & Infrastucture Inc.	EMK-2011-CA-1108	July 2012	Ames, City of; Story County, Unincorporated Areas
Worle Creek Tributary 1	TBD	AMEC Environment & Infrastucture Inc.	EMK-2011-CA-1108	July 2012	Ames, City of; Story County, Unincorporated Areas
Worle Creek Tribuatary 2	TBD	AMEC Environment & Infrastucture Inc.	EMK-2011-CA-1108	July 2012	Ames, City of; Story County, Unincorporated Areas
Zone A Flooding Sources	TBD	IIHR	ESDLQSRALS	2014	Within Story County

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 29. 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 29: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Ames, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Cambridge, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Collins, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Colo, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Colo, City of[1]	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Huxley, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Kelley, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Maxwell, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor

Table 29: Community Meetings (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
McCallsburg, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Nevada, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Roland, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Slater, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Story City, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Story County, Unincorporated Areas	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor
Zearing, City of	01/15/2021	05/10/2017	DFHP Review Meeting	IDNR, INRCOG, and Stantec
		1/16/2019	CCO Meeting	FEMA, the community, the study contractor

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 www.fema.gov.

Table 30 is a list of the locations where FIRMs for Story 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 30: Map Repositories

Community	Address	City	State	Zip Code
Ames, City of	City Hall 515 Clark Avenue	Ames	IA	50010
Cambridge, City of	City Hall 225 Water Street	Cambridge	IA	50046
Collins, City of	City Hall 212 Main Street	Collins	IA	50055
Colo, City of[1]	City Hall 209 Main Street	Colo	IA	50056
Gilbert, City of	City Hall 105 Southeast 2nd Street	Gilbert	IA	50105
Huxley, City of	City Hall 515 North Main Ave	Huxley	IA	50124
Kelley, City of[1]	City Hall 1111 Grace Street	Kelley	IA	50134
Maxwell, City of	City Hall 107 Main Street	Maxwell	IA	50161
McCallsburg, City of	City Hall 425 Main Street	McCallsburg	IA	50154
Nevada, City of	City Hall 1209 6th Street	Nevada	IA	50201
Roland, City of	City Hall 208 North Main Street	Roland	IA	50236
Slater, City of	City Hall 101 Story Street	Slater	IA	50244
Story City, City of	City Hall 504 Broad Street	Story	IA	50248

Table 30: Map Repositories (continued)

Community	Address	City	State	Zip Code
Story County, Unincorporated Areas	Story County Administration Building 900 6th Street	Nevada	IA	50201
Zearing, City of	City Hall 105 West Main Street	Zearing	IA	50278

[1] No Special Flood Hazard Areas Identified

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 .

Table 31 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 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region VII	FEMA Region VII 11224 Holmes Rd Kansas City, MO 64131 (816) 283-7003
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	

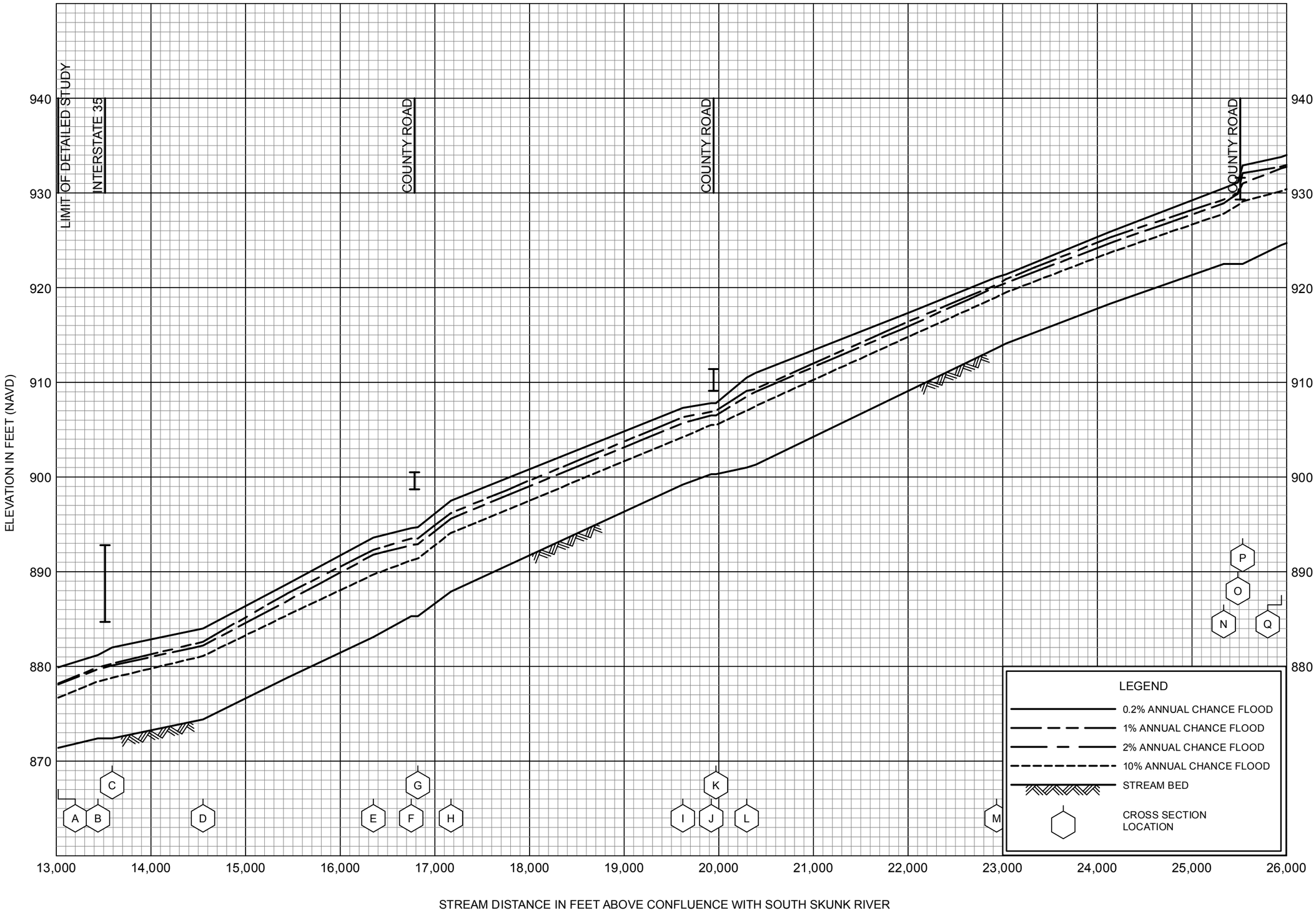
State NFIP Coordinator	Bill Cappuccio Iowa Dept. of Natural Resources Wallace State Office Building Des Moines, Iowa 50319 (515) 281-8942 bill.cappuccio@dnr.iowa.gov
State GIS Coordinator	Chris Ensminger Iowa Dept. of Natural Resources 502 E. 9th Street Des Moines, Iowa 50319 Phone: (515) 281-4216 chris.ensminger@dnr.iowa.gov

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 32 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 32: 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
Eash, D.A. 2001		*Techniques for Estimating Flood Frequency Discharges for Streams in Iowa. Unites States Geologic Survey Water Resources Investigation Report 00-4233.*	Eash, D.A.		2001	
FEMA 2014	Federal Emergency Management Agency	*Flood Insurance Study, Story County, Iowa, and Unincorporated Areas*		Washington, D.C.	2014	FEMA Flood Map Service Center msc.fema.gov
IDNR 2010	Iowa Geological and Water Survey, DNR	*LiDAR Datasets*			2010	
Lara, O.G. 1987		*Method for Estimating the Magnitude and Frequency of Floods at Ungaged Sites on Unregulated Rural Streams in Iowa. United States Geologic Survey Water Resources Investigation Report 87-4132.*	Lara, O.G.		1987	



FLOOD PROFILES

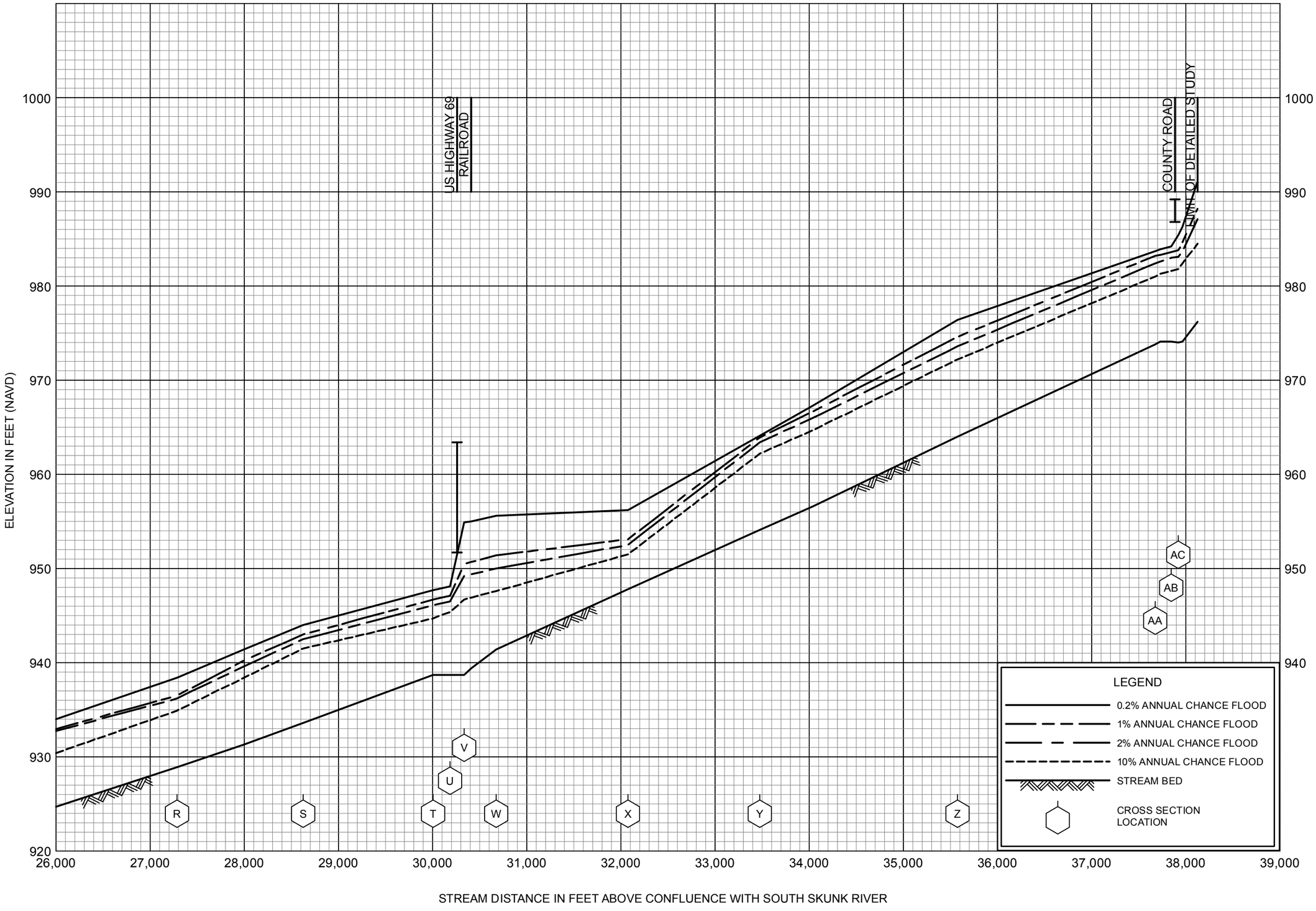
BALLARD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IA

STORY COUNTY, IA AND INCORPORATED AREAS

01P



FLOOD PROFILES

BALLARD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

STORY COUNTY, IA

STORY COUNTY, IA AND INCORPORATED AREAS

02P