Draft Environmental Assessment

Caldwell Parish Police Jury Hurricane Creek, Caldwell High School Tributary, and Hanchey Road Tributary Drainage Improvements, Banks Springs to the Village of Grayson, Louisiana

FEMA-DR-1603-LA
Caldwell Parish, Louisiana
Hazard Mitigation Grant Program
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FEMA

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LIST OF ABBREVIATIONS AND ACRONYMS

ac.	Acre(s)
ACHP	Advisory Council on Historic Preservation
ACTT	Alabama-Coushatta Tribe of Texas
AJD	Approved Jurisdictional Determination(s)
APE	Area of Potential Effects
AST	Asphaltic Surface Treatment/ Alligator Snapping Turtle
BFE	Base Flood Elevation(s)
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFM	Certified Floodplain Manager
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CLOMR	Conditional Letter of Map Revision
CMP	Corrugated Metal Pipe
CN	Caddo Nation
CNO	Choctaw Nation of Oklahoma
CO_2	Carbon Dioxide
CUP	Coastal Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	Decibels
DHS	Department of Homeland Security
dia.	Diameter
DNL	Day-night average sound level
DOT	Department of Transportation
Drive	Dr.
EA	Environmental Assessment
ECD	Erosion Control Device
EHP	Environmental and Historic Preservation
EIS	Environmental Impact Statement
E.O.	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
ft.	foot/feet
ft^2	square foot/feet

FWCA	Fish and Wildlife Coordination Act
GOHSEP	Governor's Office of Homeland Security and Emergency Preparedness
HDPE	High-Density Polyethylene
HEC	Hydrologic Engineering Center
HEC-RAS	HEC River Analysis System
HMGP	Hazard Mitigation Grant Program
HMPU	Hazard Mitigation Plan Update
HP	Historic Preservation
HUC	Hydrologic Unit Code
Hwy.	Highway(s)
JBCI	Jena Band of Choctaw Indians
H&H	Hydrologic & Hydraulic; Hydrology and Hydraulic
in.	Inch
I-20	Interstate 20
LA	Louisiana
LAC	Louisiana Administrative Code
LCDBG	LA Community Development Block Grant
LDEQ	Louisiana Department of Environmental Quality
LDOA	Louisiana Division of Archaeology
LDOTD	Louisiana Department of Transportation and Development
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LESO	Louisiana Ecological Services Office
LF	Linear Feet
LIRO	Louisiana Integration and Recovery Office
Ln.	Lane
LNHP	Louisiana Natural Heritage Program
LOMR	Letter of Map Revision
LPDES	Louisiana Pollutant Discharge Elimination System
MBCI	Mississippi Band of Choctaw Indians
MBTA	Migratory Bird Treaty Act
mi.	mile(s)
mi^2	square mile(s)
mph	Miles per hour
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standard
NBEM	National Bald Eagle Management
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NLAA	Not Likely to Adversely Affect
NLEB	Northern Long-eared Bat
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NRCS	Natural Resources Conservation Services
NWI	National Wetlands Inventory
NWP	Nationwide Permit
O_3	Ozone

OPA	Otherwise Protected Area
OSHA	Occupational Safety and Health Act/Administration
PA	Project Area
PCB	Polychlorinated Biphenyl
PL	Public Law
PM_{10}	Particulate Matter less than 10 microns in diameter
PMT	Pole-Mounted Transformer
QTO	Quapaw Tribe of Oklahoma
RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
Rd.	Road
RHA	Rivers and Harbors Act
ROI	Region of Influence
ROW	Rights-of-Way
RS	Revised Statute
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office/Officer
SPOC	Single-Point-of-Contact
SOV	Solicitation of Views
SOW	Scope of Work
SSA	Sole Source Aquifer
St.	Street
TBTL	Tunica-Biloxi Tribe of Louisiana
THPO	Tribal Historic Preservation Office/Officer
TSCA	Toxic Substances Control Act
U.S.	United States
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WDP	Wildlife Diversity Program
WSE	Water Surface Elevation(s)
WSRA	Wild and Scenic Rivers Act
y^2	Square yard(s)
y^3	Cubic yard(s)

1.0 INTRODUCTION

1.1 Project Authority

Hurricane Katrina, a Category 3 hurricane with a storm surge above normal high tide levels, moved across the Louisiana (LA), Mississippi, Alabama, and Florida Gulf Coasts on August 24, 2005. Maximum sustained winds at landfall were estimated at 140 miles per hour (mph). On August 29, 2005, President George W. Bush declared a major disaster for the State of LA and signed a disaster declaration authorizing the Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) to provide federal assistance in designated areas of LA (Hurricane Katrina, DR-1603-LA). FEMA is administering this disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Public Law (PL) 93-288, as amended. Section 404 of the Stafford Act authorizes FEMA's Hazard Mitigation Grant Program (HMGP) to provide funds to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. Through the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (Recipient), Caldwell Parish Police Jury (Subrecipient), applied for funding under FEMA's HMGP to reduce localized flooding during and after storm events along portions of Hurricane Creek, Caldwell High School Tributary, and Hanchey Road (Rd.) Tributary.

This draft Environmental Assessment (EA) is being prepared in accordance with FEMA Instruction 108-1-1 and DHS Instruction 023-01-001-01, pursuant to Section 102 of the National Environmental Policy Act of 1969 (NEPA), as implemented by Title 40 of the Code of Federal Regulations [CFR], Parts 1500-1508 (40 CFR 1500-1508), promulgated by the President's Council on Environmental Quality (CEQ). The purpose of this draft EA is to evaluate the potential impacts of the proposed action on the physical and human environment. FEMA is also using the EA to document compliance with other applicable federal laws, regulations, and Executive Orders (E.O.), including the Clean Water Act (CWA), the Clean Air Act (CAA), the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), E.O. 11988 (Floodplain Management), E.O. 11990 (Wetland Protection), and E.O. 12898 (Environmental Justice). The results of this EA will be used to decide whether to initiate preparation of an Environmental Impact Statement (EIS) or to prepare a Finding of No Significant Impact (FONSI).

1.2 Background and Site Description

Caldwell Parish is mainly rural and is located in northeastern LA with an elevation of 197 feet (ft.) above mean sea level (MSL), covering approximately 540 square miles (mi^2), of which 529 mi^2 are land and 11 mi^2 are water (Figure 1). Caldwell Parish is bordered to the east by Franklin Parish, to the southeast by Catahoula Parish, to the south by LaSalle Parish, to the southwest by Winn Parish, to the northwest by Jackson Parish, to the north by Ouachita Parish, and to the northeast by Richland Parish. Major highways in the parish include United States (U.S.) Highway (Hwy.) 165 and LA Highways 4, 126, 133, 559, and 850. Interstate 20 (I-20) runs north of Caldwell Parish in Richland and Ouachita Parishes but is easily accessed via U.S. Hwy. 165. U.S. Hwy. 165 runs north-south through the middle of the parish. LA Hwy. 4 enters the Parish from Jackson Parish on the northwest, runs through the Town of Columbia, and then eastward into Franklin Parish. This Hwy. is well used and maintained for commercial traffic toward I-20 and the southern

part of the state. LA Hwy. 126 runs from Winn Parish through the Village of Grayson and south into LaSalle Parish. LA Hwy. 133 runs from northeast Richland Parish, along Boeuf River into Herbert, and then connects with LA Hwy. 4. LA Hwy. 559 runs south from LA Hwy. 4 into Catahoula Parish in the southern portion of the Parish. Some of these roadways are significant evacuation routes for Caldwell Parish, as well as surrounding parishes during states of emergency. (Caldwell Parish Hazard Mitigation Plan Update [HMPU] 2016).

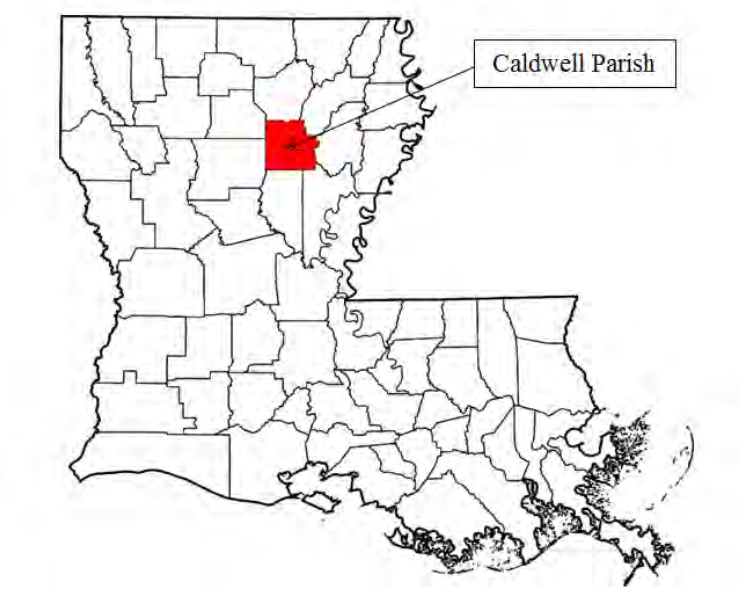

Figure 1. Location of Caldwell Parish, LA.

The two (2) major physiographic areas that make up the Parish are floodplains and uplands. The Ouachita River meanders from north to south, dividing the alluvial lands on the east from the hill country to the west. However, both sections are heavily timbered. Pine forests dominate the hills and ridges west of the river, while the east banks forests feature gum, oak, hickory, and cypress trees (Caldwell Parish HMPU 2016). The floodplains make up about 42% of the Parish. They consist of level to undulating soils on natural levees along channels of the Ouachita and Boeuf Rivers and of level soils in low areas between natural levees. The uplands make up the other 58% of the Parish and consist of nearly level to steep soils on ridgetops, side slopes, and in drainage ways. Small areas of low stream terraces are included along the major streams. Elevations in the Parish range from less than 40 ft. MSL to over 240 ft. MSL. The highest elevations in the Parish are approximately 261 ft. MSL, located in the unincorporated areas of the Parish. The incorporated areas range in elevation from 75 ft. MSL to 164 ft. MSL, with the Town of Columbia averaging 75 ft. MSL, Clarks averaging 141 ft. MSL, and the Village of Grayson averaging 164 ft. MSL. The lowest elevations of the Parish are in the eastern, unincorporated areas of the Parish. (Caldwell Parish HMPU 2016).

Caldwell Parish is at the northernmost point in the Mississippi River flood control system in LA. The Parish has experienced many floods, and much attention has been focused on flood control. When water levels are unusually high in the Mississippi, Atchafalaya, and Red Rivers, major floods are caused by backwater. Water backs up the Black, Ouachita, and Boeuf River systems, causing flooding of the low areas. This flooding is often intensified by heavy local storms.

Flooding along the Ouachita River, Lafourche Canal, and Castor Creek also occurs during heavy local rainstorms even though water levels are not high in the other rivers of the drainage system. Flood control in the Parish is provided by Ouachita River levee system. Several privately constructed levee systems also protect agricultural land in areas that are not protected by the Ouachita River levee system.

Castor Creek and its tributaries are all subject to flooding. This waterway flows southeastwardly into Caldwell Parish from a spring in northern Jackson Parish, where Caney Lake, a main tributary of Castor Creek, is located. However, the floodplains of these streams contain little or no development. Boeuf River borders Caldwell and Richland Parishes. The topography along Boeuf River is flat and poorly drained with numerous backwater lakes, sloughs, and bayous, subjecting nearby areas to frequent flooding. The area east of the Ouachita River is flooded from the headwaters of Bayou Lafourche and backwater from the Ouachita River. This area of north-central LA is subject to local flash flooding and extremely heavy rains that do considerable flood damage.

Hurricane Creek, a tributary and major contributor of Castor Creek, is also a source of flooding. Hurricane Creek starts in Banks Springs and runs through the Village of Grayson and parallel to U.S. Hwy. 165 to the south of the Town of Clarks (Figure 2), where it continues westerly to its outfall into Castor Creek, just west of the community of Kelly. Hurricane Creek is bounded by residential and commercial areas along Hwy. 165 in the Northern Section upstream of the Town of Clarks, and mainly forested area with some agricultural areas along the Southern portion. The bayou is characterized by a single channelized creek. There are portions of the creek which have narrow strips of adjacent hardwood forests and portions with much wider forested areas.

Flooding along Hurricane Creek can be attributed to localized heavy rainfall, which overtaxes the stream's main channel. The creek floods in relatively small rain events because the sediment and debris have built up portions of the channel. The highest flood that residents along Hurricane Creek can remember occurred in 1975. Flooding occurred in several houses, and the Parish high school flooded. The last major restoration of the channel occurred between 1978-1979 by the LA Department of Transportation and Development (LDOTD). There are approximately 240 homes and businesses along Hurricane Creek that are subject to flooding.

Historically, significant flooding has occurred in Caldwell Parish between 1990 and 2021. Caldwell Parish has received 20 Presidential Declarations resulting from either tropical cyclones (eight (8) declarations) or flooding (12 declarations). Many of the flood events in the Parish have been the direct result of significant rainfall. One of the main contributors to flooding in Caldwell Parish is the Ouachita River. During periods of excessive rainfall, the river will crest and cause riverine flooding to areas surrounding the river. Stormwater excess and riverine flooding primarily affect the low-lying areas of the Parish, and flood depths of up to 3 ft. can be expected in the unincorporated areas of the Parish and the incorporated areas of Clarks, Columbia, and Grayson (Caldwell Parish HMPU 2016).

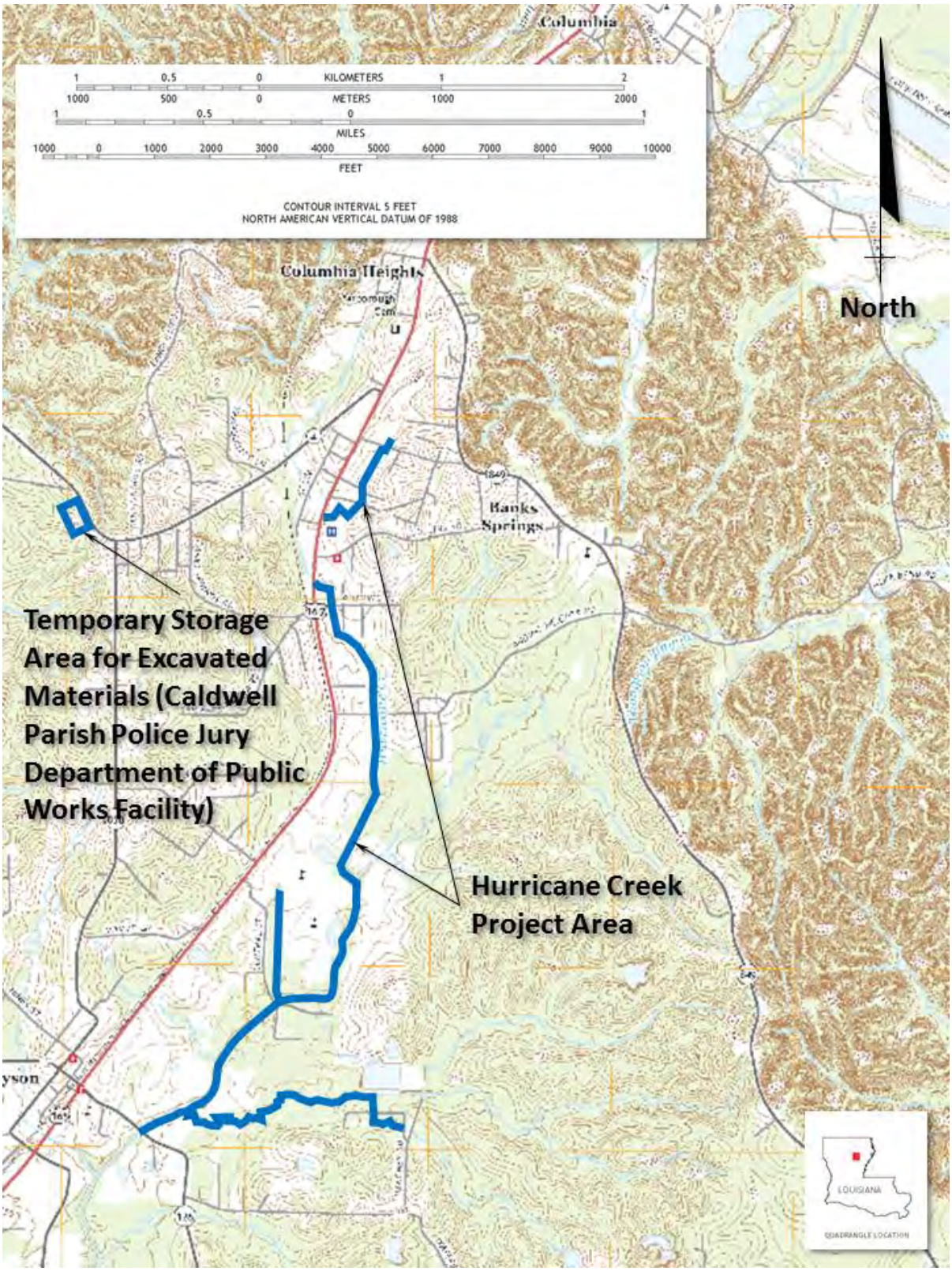

Figure 2. Topographic map of Hurricane Creek, Caldwell Parish, LA (U.S. Geological Survey (USGS) 7.5-minute series topographic map, Columbia LA quadrangle).

In October 2006, flooding was largely responsible for the damages to many businesses, schools, vehicles, and homes, as well as the inundation of roads in Columbia, LA. A total of 17.06 inches (in.) of rainfall was recorded two (2) miles (mi.) southwest of Grayson, LA. Another flood event in November 2006 affected areas along Hurricane Creek from Collins Street (St.) to LA Hwy. 126 in Columbia and Grayson, LA and caused a major overflow of Hurricane Creek and its tributaries flooding residences, businesses, Caldwell Parish High School, and a major sewage lift station. The high school experienced $336,000 in damages to offices, the gymnasium, floors, and the auditorium. The damages included the loss of a 23,000 ft^2 building with an estimated replacement value of $4,000,000 used for classrooms, offices, and a band hall. This flood event caused the school to close and evacuation. Other losses included the flooding of eight (8) residences with at least one (1) ft. of stormwater. Flood waters also shorted the electrical control system for the wastewater lift station, which serves more than 500 homes, businesses, schools, and churches, taking it out of service for 24 hours. The same November storm event affected residences and businesses along Hurricane Creek from LA Hwy. 126 to Zeagler Rd. in Grayson, LA. The overflow of Hurricane Creek caused the closure of U.S. Hwy. 165 which prevented interstate transport of goods and services. Of those structures damaged, two (2) residences and one (1) fire station, in Grayson, LA, had more than one (1) ft. of stormwater with estimated losses at $164,000.

Caldwell Parish remains at high risk of water inundation from various sources, including flooding, hurricanes, tropical storms, and thunderstorms (Caldwell Parish HMPU 2016). The Parish depends on the Hurricane Creek drainage channel to transport a large quantity of stormwater from the southern half of the Parish. The Parish has experienced major flooding due to the loss of approximately 30% of the drainage capacity of Hurricane Creek. The creek floods adjacent areas including residential areas during relatively small storm events due to inadequate culverts, ineffective culverts, heavy brush and large trees, and inadequate cross sections. Thick brush and large trees have flourished within the main portions of the channel. As portions of the creek flood, erosion occurs, banks wash in and slough off. Trees and woody material fall in, wash in and/or blow into the channel. Silt bars appear, and the channel cross-section is altered and degraded, which further reduces the capacity of the channel.

The inability of the stormwater to freely flow from the area contributes to the flooding of residences, businesses, schools, public buildings and facilities, and streets along the Hurricane Creek drainage channel. During the heavy rains, portions of the roads flood resulting in the roads being impassible for vehicle use. Flood events cause major overflows of the Hurricane Creek drainage channel and close US 165 to traffic which causes delays in interstate transport of goods and services. Detours and road closures do not allow easy access for residents or emergency first responders. The Subrecipient needs to alleviate flooding in these areas because the existing drainage system does not provide adequate flood protection during heavy rain events.

2.0 PURPOSE AND NEED

The HMGP provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The Parish is proposing to reduce flooding near Hurricane Creek and its tributaries by implementing hazard mitigation measures in

accordance with the HMGP to protect the health, safety, and property of the residents and surrounding areas during sustained rainfall events.

The purpose and need for the project are defined by the reoccurring flooding issues experienced in the 1.40 mi^2 (Sub-Basin I)(900 acres (ac.)) and 4.80 mi^2 (Sub-Basin II)(3,065 ac.) drainage watersheds for the portions of Hurricane Creek in the project area. The area floods frequently due to insufficient capacity and undersized storm pipes. The specific need of this project is to effectively alleviate localized flooding experienced during and after minor and major storm events due to insufficient culverts, inadequate cross sections, and heavy brush and large trees. If left unprotected, flooding would increase in frequency and severity during future storm events, would potentially jeopardize the well-being of the people, and repeatedly damage homes and property in the area along Hurricane Creek, Caldwell High School Tributary, and Hanchey Road (Rd.) Tributary. The project would protect homes and businesses from flood damage, allow emergency access and egress to and from, and ensure that public services, utilities, communications, and critical facilities operate during and after flooding events.

The goal of the project is to improve the capacity of the drainage channel and mitigate the flood damage to homes, schools, and businesses affected by the flooding to at least the 10-year event. Adequate drainage capacity is critical to expeditiously move stormwater from flood-prone areas along the creek and its tributaries to the surrounding uninhabited floodplain.

3.0 ALTERNATIVES

NEPA requires Federal agencies to consider the effects of a proposed action and any reasonable alternatives on the human and natural environment. Therefore, a key step in the EA process is to identify a range of reasonable alternatives to be studied in detail in the EA. This step is commonly referred to as an alternative's development and screening process. The purpose is to identify reasonable alternatives to the proposed action to allow for meaningful subsequent comparison of how these alternatives may affect the human and natural environment. This section describes alternatives proposed and considered in addressing the purpose and need.

3.1 No Action Alternative

The No Action Alternative is used to establish the baseline conditions upon which the environmental and socio-economic impacts associated with the proposed action and considered actions are assessed. Implementation of the No Action Alternative would entail no hazard mitigation measures or enhanced flood reduction at the project sites. Consequently, this alternative would not provide any type of protection to residents of the area during peak flow events, future storms, or other emergency situations. Under this alternative, flooding would not be abated or improved, the condition of the drainage channel would continue to deteriorate, and the flooding would increase. This would result in hazardous conditions for not only the residents of Caldwell Parish, but also businesses and emergency responders who utilize the roadways and live in this area. Structures and residents located within the area would continue to suffer from flooding during frequent rain events. After a major weather event, potential health risks associated with the inability of the Creek to maintain adequate drainage and flood water protection would continue to be a problem. This alternative does not meet the purpose and need but will continue to be evaluated throughout this EA and serve as a baseline comparison.

3.2 Preferred Action Alternative: Hurricane Creek Drainage Improvements to Improve the System Hydraulics and Reduce Water Surface Flooding and Water Surface Elevations

The Preferred Action Alternative would improve the drainage of Hurricane Creek from Banks Springs to Grayson, LA and two (2) of its tributaries, Caldwell High School Tributary located in Columbia and Hanchey Rd. Tributary located in Grayson. The proposed project starts at LA Hwy. 126 in Grayson and ends at Martin Luther St. in Banks Springs. The project area is located approximately 1.5 mi. south of the Ouachita River and includes segments of the creek and tributaries in the communities of Banks Springs and Grayson. Portions of the creek are in residential areas and are prone to flooding in relatively small storm events. The proposed project entails clearing, grading, and removing impediments on one side of the creek from the bottom of the creek to the top bank, for approximately 17,755 linear feet (LF). The proposed improvements involve rechanneling, reshaping, and restoring approximately 3.5 mi. of bank line, replacing existing culverts, and installing a new railroad flat car bridge.

Work involved to re-channel, reshape, and restore the creek would occur on one side of the creek for the majority of the project to avoid existing structures and to reduce the amount of disturbance to the environment including existing trees and natural habitat. The proposed project includes replacing several existing culverts which are either misaligned with the creek, broken, or undersized. Replacement culverts would require removal, replacement of bedding, and fill to be placed back over the culverts.

The bottom of the creek would be leveled to improve hydraulic capacity. The creek would be rechanneled to bottom widths varying from 6 ft. at the northern most limits to 16 ft. at the southern extents. The height of the channel varies depending on the elevation of adjacent land areas. The total top width of the creek would be approximately 40 ft. wide. Currently, the channel side slopes are steep which are causing erosion issues in several areas. Side slopes would be constructed at 2:1 due to the proximity of adjacent structures. Berms, coffer dams, and turbidity barriers, which will detain construction stormwater, and erosion control blankets with seeding would be installed along the side banks of the creek to stabilize side slopes.

Up to 38,550 cubic yards (yd^3) of sediment would be removed from the channel using a track hoe from one side of the slough or from within the slough. An estimated 2,000 yd^3 of fill would be required to level portions of the creek and fill in damaged areas at crossings. Excavated materials would be temporarily stockpiled in a 4.6 ac. area at the Caldwell Parish Police Jury Department of Public Works facility shown on Figure 2 (Appendix D). Erosion control blankets, rip rap check dams, and seeding would be installed to stabilize areas disturbed by construction. An estimated 575 yd^3 of rip rap and 2,500 square yards (yd^2) of reno mattress would be placed to stabilize areas from erosion and to create dissipators to reduce the velocity of the creek.

Table 1 lists the beginning and ending coordinates for each project area (PA) including the Parish Scope of Work (SOW) that will extend approximately 1,300 LF upstream from just north of Martin Luther St. (also north of PA 1). See Figures 3 and 4 for a site overview of the proposed project. The specific SOW for each of the project areas is presented below. Site photographs are exhibited in Appendix A. Extensive site plan drawings are shown in Appendix B.

Table 1. Beginning and Ending Coordinates for Four (4) Proposed Project Areas and Parish SOW in Caldwell Parish, LA.

Project Area	Creek or Tributary	Beginning Coordinates	Ending Coordinates
	Parish SOW	32.085238, -92.089135	32.082166, -92.097768
PA 1	Hurricane Creek (Segment 1)	32.082166, -92.097768	32.078417, -92.094816
PA 2	Hurricane Creek (Segment 2)	32.074965, -92.095524	32.047914, -92.105708
PA 3	Caldwell High School Tributary	32.060018, -92.097715	32.054397, -92.097768
PA 4	Hanchey Rd. Tributary	32.047267, -92.090252	32.047361, -92.090431

Project Area 1 (PA 1) – Hurricane Creek East and North of U.S. Hwy. 165

PA 1, located in the northern part of Hurricane Creek, begins north of Martin Luther St. (latitude: 32.083224, longitude: -92.090450) in Banks Springs, LA and ends where Hurricane Creek intersects three (3) existing box culverts crossing under at U.S. Hwy. 165 (latitude: 32.078415, longitude: -92.094890). The proposed improvements in this area include rechanneling, reshaping, and restoring approximately 2,000 LF of Hurricane Creek using bank stabilization as necessary, as well as installing erosion and sediment control measures, such as rip rap, blankets, hydroseed, or silt fencing, as necessary. Other improvements include removal of an existing 54 inch (in.) diameter (dia.) x 40 ft. reinforced concrete pipe (RCP) culvert from under Martin Luther St., removal of two (2) 36 in. dia. x 26 ft. RCP culverts from under a private drive (latitude: 32.0816550, longitude: -92.091401), and replacement of the removed culverts with a single, underground storm drain system consisting of two (2) 54 in. dia. x 314 ft. RCP culverts. A portion of the creek would be rerouted into the storm drain system due to extreme meandering of the creek at the road crossing which causes flooding in adjacent areas. An estimated 120 yd^3 of concrete would be required to replace the private driveway during construction of the storm drain system at Martin Luther St.

After Martin Luther St., improvements will continue on the west side of the creek, south to Sidney Lane (Ln.). Under Garsee Rd. (latitude: 32.079516, longitude: -92.093071), the proposed improvement is removal of an existing 48 in. dia. x 30 ft. corrugated metal pipe (CMP) culvert and replacing it with a 60 in. dia. x 46 ft. CMP culvert. At a small crossing 198 ft. north of Garsee Rd. (latitude: 32.079861, longitude: -92.092933), an existing 60 in. dia. x 16 ft. CMP culvert will be removed and replaced with a 60 in. dia. x 30 ft. CMP culvert. Under Sidney Ln. (latitude: 32.078854, longitude: -92.093449), the proposed improvement is removal of a temporary culvert, an existing 84 in. dia. x 48 ft. steel railroad tank car, and replacement with an 84 in. dia. x 52 ft. high density polyethylene (HDPE) culvert pipe. Prior to the temporary culvert installation, an existing 60 in. dia. x 22 ft. CMP culvert was located at Sidney Ln. The total project site for PA 1 measures 4.40 ac. See Table 1 for beginning and ending points of the project area. After Sidney Ln., the east side of the creek will be cleared for approximately 75 LF before a transition into clearing both sides of the creek. At this location, the creek takes a 90-degree turn prior to entering the storm drain system under U.S. Hwy. 165. The creek in PA 1 would be accessed by a 20 ft. to 50 ft. wide access area. Location of the access areas and widths area shown in Table 2. The proposed number of trees that would be removed from this area is less than 1.3 ac. PA 1 is shown on a topographic map of the project vicinity presented as Figure 3.

Access roads would be kept to a maximum width of 20 ft. and be placed on one side of the creek along the top banks, and would meander around trees to preserve existing vegetation, with staging

areas located near major road intersections north of Garsee Rd., south of Rushing St., south of Anding Heights Rd., and north and south of Central St. (Appendix B). Tree removal would be limited to only along the top proposed bank and would have the stumps preserved to help maintain the bank slope stability. All construction would be kept within the limits of disturbance line. All trees, woody growth and debris from the channel bottom, side-slopes, excavated limits, and to 5 ft. from the top bank would be removed. A minimum number of trees would be removed to facilitate equipment access from 5 ft. to 20 ft. on the top bank. Cypress trees or trees with greater than 18 in. in dia. would not be removed in the 5 ft. to 20 ft. limit unless absolutely necessary. Access in the 20 ft. to 40 ft. limit would be restricted and only used if necessary. Per the letter dated August 28, 2018, from McManus Consulting Engineers, temporary easement/access from majority of the landowners within the project area has been obtained (Appendix D). For the few properties that do not have a signed agreement, the Police Jury would use the LA Attorney General's opinion that permits the Police Jury to maintain drainage channels with a 100 ft. access easement on each side of the creek. If private property is within the servitude it would be avoided or worked around.

Table 2. Location of the Access Points for Each of the Four (4) Proposed Project Areas and Parish SOW Area in Caldwell Parish, LA.

Area	Station	Station	Width (ft.)	Channel Bank	Notes
Parish Scope	520+50	533+50	20ft	West Bank	This will be the Parish's matching scope to clear out the channel.
Project Area 1 (PA 1)	500+00	501+30	20ft	North Bank	None
Project Area 1 (PA 1)	500+00	504+97	20ft	South and East Banks	Access road will go around helipad and stay clear of helipad by 50 ft.
Project Area 1 (PA 1)	505+07	507+82	20ft	West Bank	None
Project Area 1 (PA 1)	507+92	510+00	20ft	West Bank	None
Project Area 1 (PA 1)	510+00	513+00	50ft	West Bank	None
Project Area 1 (PA 1)	514+90	515+40	20ft	West Bank	None
Project Area 1 (PA 1)	515+40	515+80	50ft	West Bank	None
Project Area 1 (PA 1)	515+80	516+87	20ft	West Bank	None
Project Area 1 (PA 1)	517+05	521+50	Varies	West Bank	Access road will be between building and channel
Project Area 2 (PA 2)	230+24	229+00	20ft	North Bank	None
Project Area 2 (PA 2)	230+24	224+68	20ft	West Bank	None
Project Area 2 (PA 2)	224+51	221+01	50ft	West Bank	None
Project Area 2 (PA 2)	221+01	205+95	20ft	West Bank	None
Project Area 2 (PA 2)	205+95	202+24	50ft	West Bank	None
Project Area 2 (PA 2)	202+16	198+66	50ft	West Bank	None
Project Area 2 (PA 2)	198+66	138+00	20ft	West Bank	None
Project Area 2 (PA 2)	138+00	137+17	50ft	West Bank	None
Project Area 2 (PA 2)	136+99	133+49	50ft	West Bank	None
Project Area 2 (PA 2)	133+49	100+09	20ft	West Bank	None
Project Area 3 (PA 3)	600+00	621+10	20ft	East Bank	None
Project Area 4 (PA 4)	749+55	748+95	20ft	East Bank	None

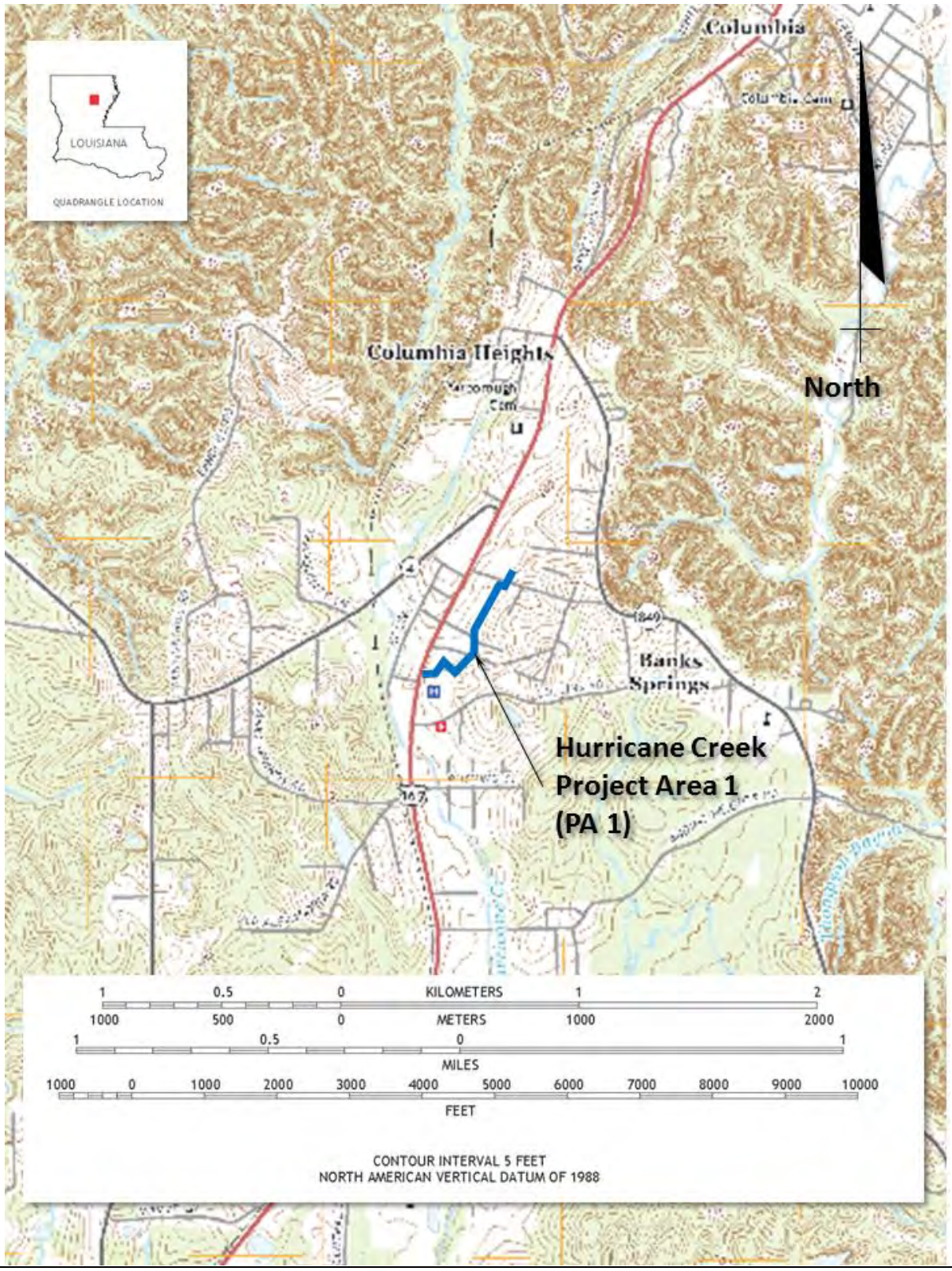

Figure 3. Topographic Map Displaying the Location of the Proposed Hurricane Creek Drainage Improvements for PA 1, Caldwell Parish, LA.

Project Area 2 (PA 2) – Hurricane Creek Segment 2

PA 2 is the second segment of Hurricane Creek in Banks Springs, LA, and is located downstream from PA 1, where the creek intersects box culverts under U.S. Hwy. 165 (latitude: 32.078415, longitude: -92.094890), curves south behind a garage on Rushing St., flows under a crossing at Rushing St. (latitude: 32.073743, longitude: -92.094596), and ends where the creek intersects with LA Hwy. 126 (latitude: 32.047915, longitude: -92.105761). Proposed improvements in this area include rechanneling, reshaping, and restoring approximately 13,024 LF of Hurricane Creek; installing erosion and sediment control measures, such as rip rap, blankets, hydroseed, or silt fencing, bank stabilization, and check dams as necessary; and replacing an existing bridge (latitude: 32.054236, longitude: -92.097959) with a new, 19 ft. wide x 70 ft. long railroad flat car bridge under Central St.. Existing timber headwalls would be utilized for construction of the replacement bridge. The total project site for PA 2 measures 19.58 ac. See Table 1 for beginning and ending points of the project area. The creek in PA 2 would be accessed by a 20 ft. to 50 ft. wide access area. Location of the access areas and widths are listed in Table 2. The proposed number of trees to be removed from this area is 7.05 ac. PA 2 is shown on a topographic map of the project vicinity presented as Figure 4.

Project Area 3 (PA 3) – Caldwell High School Tributary

PA 3 is located in Banks Springs, LA, along a section of the Caldwell Parish High School Tributary beginning at a culvert situated along Spartan Drive (Dr.) (latitude: 32.060032, longitude: -92.097701), which is an entranceway to the high school, and extending south to where the tributary intersects with Hurricane Creek east of Central St.. Proposed improvements in this area include rechanneling, reshaping, and restoring approximately 2,095 LF of the tributary and installing erosion and sediment control measures, such as rip rap, blankets, hydroseed, or silt fencing, and bank stabilization. The total project site for PA 3 measures 3.01 ac. See Table 1 for beginning and ending points of the project area. The creek in PA 3 would be accessed by a 20 ft. to 50 ft. wide access area. Location of the access areas and widths are shown in Table 2. The proposed number of trees to be removed from this area is 1.0 ac. PA 3 is shown on a topographic map of the project vicinity presented as Figure 4.

Project Area 4 (PA 4) – Hanchey Rd. Tributary

PA 4 is located along the Hanchey Rd. Tributary, beginning on the west side of Hanchey Rd. and intersecting Hurricane Creek approximately 846 ft. northeast of LA Hwy. 126 in Grayson, LA. Proposed improvements in this area include rechanneling, reshaping, and restoring approximately 60 LF of the tributary and installing erosion and sediment control measures, such as rip rap, blankets, hydroseed, or silt fencing, bank stabilization, and checking dams as necessary. The total project site for PA 4 measures 0.1 ac. See Table 1 for beginning and ending points of the project area. The creek in PA 4 would be accessed by a 20 ft. to 50 ft. wide access area. Location of the access areas and widths are shown in Table 2. The proposed number of trees to be removed from this area is 0 ac. PA 4 is shown on a topographic map of the project vicinity presented as Figure 4.

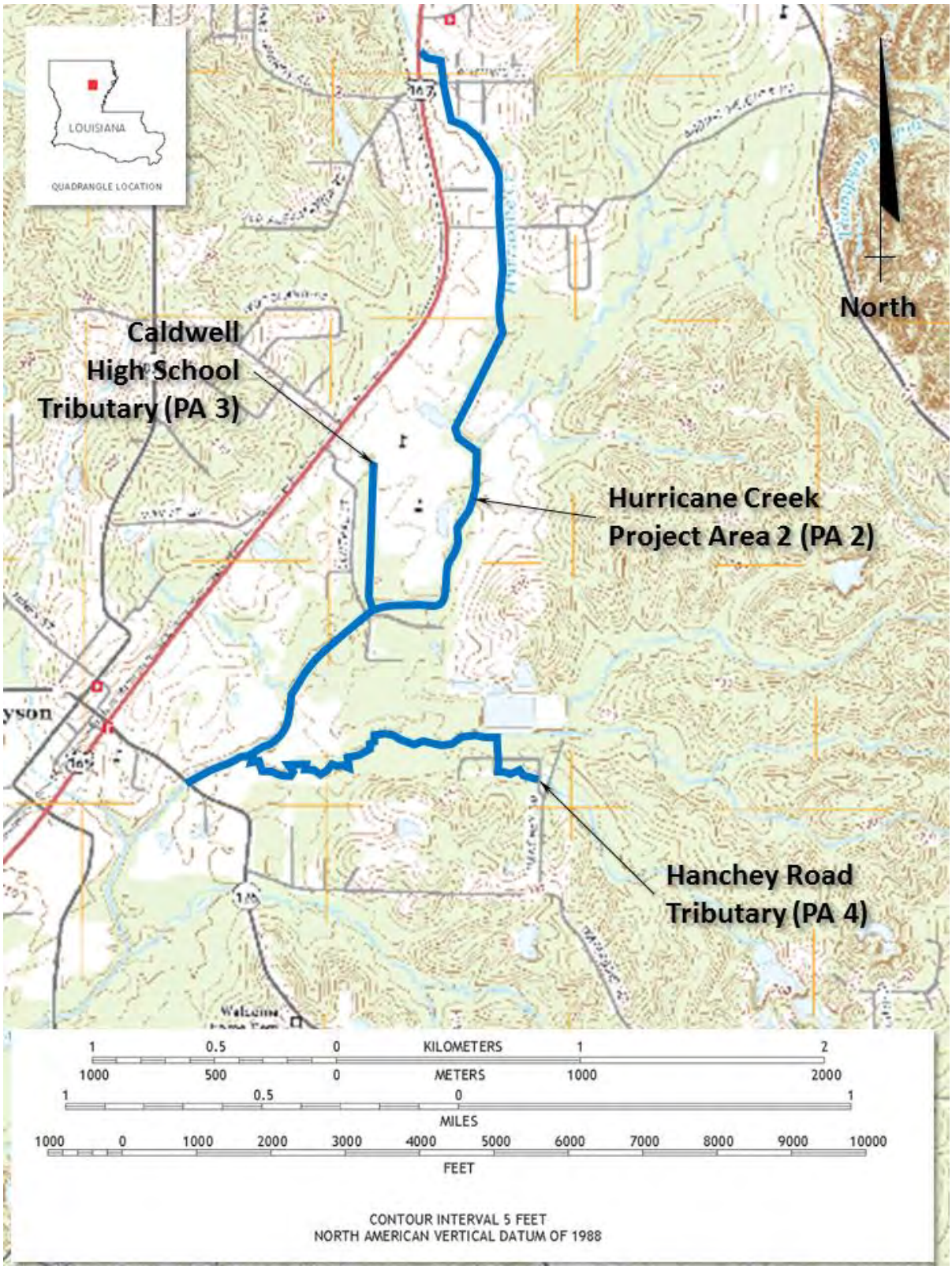

Figure 4. Topographic Map That Shows Locations of Hurricane Creek PA 2, Caldwell High School Tributary PA 3, and Hanchey Rd. Tributary PA 4, in Caldwell Parish, LA.

3.3 Considered Action Alternative: Straighten and Widen Hurricane Creek for Stormwater Drainage

The Considered Action Alternative includes straightening the drainage channel by removing the meandering of the natural flow of Hurricane Creek and widening the channel to make it a true canal for stormwater drainage. This project would require the purchase of new, wider rights-of-way (ROW) as well as houses or other structures that currently flood and whose locations lie in close proximity to the creek. The proposed channel is approximately 11 mi. long. It is estimated that at least ten (10) homes would be purchased and removed, and 50 ft. of ROW purchased from approximately 50 landowners. This alternative meets the purpose and need and is carried forward and evaluated throughout the assessment.

4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

4.1 Impact Summary

The following matrices summarize the results of the environmental review process (Tables 3 and 4). On February 12, 2016, FEMA Environmental and Historic Preservation (EHP) Department consulted with resource agencies by submitting a Solicitation of Views (SOV). FEMA-EHP has documented the agency responses in the Affected Environment and Environmental Consequences Matrices provided as Tables 3 and 4. See Appendix C Agency Correspondence for copies of the responses from the resource agencies.

FEMA-EHP has reviewed and assessed the Preferred Action Alternative, the No Action Alternative, and a Considered Action Alternative. Potential environmental impacts that were found to be negligible are not further evaluated. Resource areas with the potential for impacts of minor, moderate, or major intensity are further developed in the subsequent sections.

Under the No Action Alternative, no improvements would be made, and the condition of the drainage channel would continue to deteriorate, increasing the potential for future flooding. The risk of continued flooding associated with the No Action Alternative would result in ongoing impacts to local infrastructure. If the area were to continue to flood, Caldwell Parish would be in danger of loss of life and property damage. Flooding would likely continue to occur, and both insured and uninsured losses would be expected. The community would continue to experience flooding effects similar to those that have occurred during past events. The No Action Alternative does not meet the purpose and need but will serve as a baseline comparison of impacts from other action alternatives. For some resources, the No Action Alternative would not result in any adverse impacts. Definitions of impact intensity are described below.

Negligible Impact: The resource area (e.g., geology) would either not be affected, changes would be non-detectable, or if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable. Effects to Cultural Resources would either be non-existent, i.e., a building is less than 50 years old and/or no known archeological sites are present on the site, or the project is determined not likely to affect with State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO) concurrence. No mitigation is needed.

Minor Impact: Changes to the resource area would be measurable, although the changes would be small and localized. Impacts would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects. Effects to Cultural Resources are not likely (i.e., building is at least 50 years old and/or known archeological sites are near the project area), but specific conditions/mitigation are sufficient to maintain the determination.

Moderate Impact: Changes to the resource would be measurable and have both localized and regional scale impacts. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary to reduce any potential adverse effects. Effects to Cultural Resources are likely (i.e., building is 50 years old and/or known archaeological sites are in the project area. Impacts would have at least local and possibly regional scale impacts).

Major Impact: Changes would be readily measurable and would have substantial consequences on a local and regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, although long-term changes to the resource would be expected. Effects to Cultural Resources are likely (i.e., building is at least 50 years old and/or known archeological sites are in the project area. Impacts would have substantial consequences on a local and regional level).

Table 3. Affected Environment and Environmental Consequences Matrix for the Preferred Action Alternative: Hurricane Creek Drainage Improvements to Improve the System Hydraulics and Reduce Water Surface Flooding and Water Surface Elevations

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Geology and Soils	Negligible	The Farmland Protection Policy Act (FPPA), Subtitle I of Title XV, Section 1539-1549, was enacted in 1981 and is intended to minimize the impact federal actions may have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. It assures that, to the extent possible, federal programs and policies are administered to be compatible with state and local farmland protection policies and programs. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. Per review of U.S. Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) Web Soil Survey, the soils mapped at the proposed project areas are predominately composed of Savannah-Sacul association, gently sloping [SH], Frizzell-Guyton-Providence association, 0 to 2% slopes [FZ], Sacul fine sandy loam, moderately sloping [SC], Tippah silt loam, 1 to 5% slopes [Tp], and Providence silt loam, 1 to 5% slopes [Po]. Guyton and Ouachita silt loams, frequently flooded [GY], Olla-Cadeville association, steep [OC], and Ruston fine sandy loam, 3% to 8% slopes [Ru] soils are also located in the proposed project areas but are not considered prime farmland soils. Per NRCS response, dated February 26, 2016, the proposed construction areas are within existing drainage ROW and therefore exempt from the rules and regulations of the FPPA. No impacts to NRCS work in the vicinity are anticipated. Potential exists for short-term, localized increase in soil erosion during construction.	A SOV was drafted and submitted to the NRCS by the FEMA on February 2, 2016. NRCS response dated February 26, 2016. See Appendix C Agency Correspondence. NRCS Web Soil Survey was accessed on September 4, 2018 at: https://websoilsurvey.sc.egov.usda.gov/ confirmed soils on the site are within existing ROW and are exempt.	Implement construction stormwater Best Management Practices (BMP); install silt fences/straw bales to reduce sedimentation. Area soils would be covered and/or wetted during construction. If fill is stored onsite, the contractor would be required to appropriately cover it. See Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Hydrology and Floodplains (EO. 11988)	Moderate	Executive Order (E.O. 11988), Floodplain Management, requires Federal agencies to avoid direct or indirect support or development within the 100-year floodplain whenever there is a practicable alternative. FEMA's regulations for complying with EO 11988 are found at 44 CFR Part 9. Caldwell Parish enrolled in the National Flood Insurance Program (NFIP) on April 3, 1978 and the Village of Grayson enrolled in the NFIP on July 9, 1981. Per Flood Insurance Rate Map (FIRM) Panels 22021C0280C and 22021C0290C, dated September 5, 2012, the project is within portions of Zone X, outside the special flood hazard area (SFHA); Zone AE, area of 100-year flooding with Base Flood Elevation (BFE) determined; and portions of regulatory floodways. The flood hazard information along Hurricane Creek would be revised with a Conditional Letter of Map Revision (CLOMR) 20-06-3058-R. Precautionary measures were taken to try and remain within the effective floodway boundaries, in order to comply with the no rise criteria. The results indicate that the floodway would extend further into the floodplain to keep the water surface elevation (WSE) surcharges below 1 ft. Upon completion of the project the proposed elevation of the 1% flood would decrease, and by pre-adopting the revised flood risks per 44 CFR 65.12, the community would be keeping their floodway and floodplains properly managed per FEMA regulation 44 CFR 9.11(d)(4). The proposed project also satisfies the requirements of 44 CFR Section 65.12 of the NFIP regulations. FEMA finds there is no practicable alternative to avoiding moderate impacts to the floodplain. Caldwell Parish Hurricane Creek drainage improvements are needed to control flooding. See Section 4.2 Hydrology and Floodplains, Hydrologic & Hydraulic (H&H) study reports (Appendix D) and 8-step process (Appendix E).	Caldwell Parish FIRM panels 22021C0280C and 22021C0290C, effective September 5, 2012. See Appendix D Reports and Other Correspondence	The Subrecipient is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. Per 44 CFR 9.11(d), mitigation or minimization standards must be applied, where possible. Per 44 CFR 9.11(d)(4), there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the WSE of the base flood more than 1 ft. at any point within the community. Per 44 CFR 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the NFIP. Should the site plans (including drainage design) change, the Subrecipient must submit changes to FEMA-EHP for review and approval prior to the start of construction. New construction must be compliant with current codes and standards. All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to GOHSEP and FEMA as part of the permanent project files. See Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Wetlands (E.O. 11990)	Minor	E.O. 11990, Protection of Wetlands, directs Federal Agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands for federally funded projects. FEMA regulations for complying with EO 11990 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands. Per correspondence from the EPA, dated February 17, 2016, jurisdictional waters of the U.S. occur on the proposed project sites. The U.S. Fish and Wildlife Service (USFWS) – National Wetlands Inventory (NWI) map queried on October 17, 2017 at https://www.fws.gov/wetlands/Data/Mapper.html. shows that mapped riverine wetlands are present in the project areas. Per the site observations documented in *Wetland Delineation Report, Hurricane Creek Drainage* (McManus Consulting Engineers, Inc.), dated November 7, 2017, two (2) additional wetland areas were identified. Per U.S. Army Corps of Engineers (USACE) response, dated October 19, 2018, a Department of the Army Nationwide Permit (NWP) 3 (MVK-2011-1213), was issued. Temporary and localized impacts to riverine wetlands are anticipated during construction; however, the wetlands would be restored to their original state. See Section 4.3 Wetlands and Waters of the U.S. for further discussion of impacts.	A SOV was drafted and submitted to the USACE and the EPA by the FEMA on February 12, 2016. EPA response dated February 17, 2016. NWI map accessed on October 17, 2017 at: https://www.fws.gov/wetlands/Data/Mapper.html. *Wetland Delineation Report, Hurricane Creek Drainage* by McManus Consulting Engineers, Inc. dated November 7, 2017. USACE Permit (MVK-2011-1213) authorized under NWP 3 issued on October 19, 2018. See Appendices C Agency Correspondence and D Reports and Other Correspondence.	Any changes or modifications to the proposed project will require a revised wetland jurisdictional determination. Off-site locations of activities such as borrow, disposals, haul-and detour-roads and work mobilization site developments may be subject to the Department of the Army regulatory requirements and may have an impact to a Department of Army project. The project is in close proximity or directly adjacent to wetlands. Extreme care should be taken during the construction process through the appropriate use and maintenance of BMPs. Erosion Control Devices (ECDs) such as silt fencing, hay bales, sediment traps, etc., must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby wetland areas, per CWA and E.O. 11990. Potential concerns include but are not limited to silting-in and contamination from spills. Proper signage is required to clearly identify the adjacent wetland boundaries to avoid potentially adverse impacts from construction vehicles/equipment/supplies that accidentally leave the boundaries of the approved ROW. Any adverse impacts to adjacent wetlands resulting from the construction of this project would jeopardize receipt of federal funding. If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the USACE, the Subrecipient should contact the USACE directly regarding permitting issues. If a USACE permit is required, part of the application process may involve a water quality certification from LDEQ. The Subrecipient shall ensure that BMPs are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the CWA and E.O. 11990. The Subrecipient must comply with all the Special, General, and Regional Conditions listed in the required NWP 3 (MVK-2011-1213) issued on October 19, 2018, which expired on March 18, 2022. The Subrecipient is required to coordinate with USACE to reinstate NWP 3. The Subrecipient must provide a signed certification of compliance stating that the authorized work was completed in accordance with the terms and conditions of the said permit including any required mitigation.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
				All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to GOHSEP and FEMA as part of the permanent project files. See Section 6.0 Conditions and Mitigation Measures.
Surface Water and Water Quality	Negligible	USACE regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to Parts 401 and 404 of the CWA. Section 402 of the CWA, entitled National Pollutant Discharge Elimination System (NPDES), authorizes and sets forth standards for state administered permitting programs regulating the discharge of pollutants into navigable waters within the state's jurisdiction. USACE also regulates the building of structures in waters of the U.S. pursuant to Parts 9 and 10 of the Rivers and Harbors Act (RHA). Per the NEPAssist database, no impaired water bodies have been identified within five (5) mi. of the proposed Hurricane Creek project areas. Per LDEQ response, dated February 29, 2016, the department has no objections and offered general comments (see Section 6.0 Conditions and Mitigation Measures). Per USACE response, dated October 19, 2018, a Department of the Army NWP 3 (MVK-2011-1213), was issued. Although there is a potential for short-term localized increase in sedimentation during construction, the proposed project would pose no significant long-term impacts to water quality.	A SOV was drafted and submitted to the USACE and the LA Department of Environmental Quality (LDEQ) by the FEMA on February 12, 2016. LDEQ response dated February 29, 2016. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018. USACE Permit (MVK-2011-1213) authorized under NWP 3 issued on October 19, 2018. See Appendix C Agency Correspondence.	ECDs such as silt fencing, hay bales, sediment traps, etc. must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby waterways. If the project results in a discharge to waters of the State, submittal of a LA Pollutant Discharge Elimination System (LPDES) application may be necessary. All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas greater than or equal to one (1) ac. The Subrecipient must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit. If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting additional wastewater. If the project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application of Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information: (http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx or by contacting the LDEQ Water Permits Division at (225) 219-9371. Water softeners generate wastewaters that may require special limitations depending on local water quality considerations. If water system improvements include water softeners, contact LDEQ Water Permits to determine if special water quality based limitations will be necessary. The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
				See Section 6.0 Conditions and Mitigation Measures.
Groundwater	Negligible	The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of SDWA. EPA defines a sole or principal source aquifer as one which supplies at least 50% of the drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate these areas can have no alternative drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. Per NEPAssist database search, the proposed project areas do not lie within the boundaries of a designated SSA. Caldwell Parish does not lie over an SSA. Per LDEQ response dated February 29, 2016, the department has no objections and offered general comments (see Section 6.0 Conditions and Mitigation Measures). The proposed project should not have an adverse effect on the quality of the groundwater underlying the project site.	A SOV was drafted and submitted to the EPA and LDEQ by the FEMA on February 12, 2016. LDEQ response dated February 29, 2016. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018. See Appendix C Agency Correspondence.	All precautions should be observed to protect the groundwater of the region. BMPs should be implemented to ensure groundwater is protected. If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during this project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents. The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project. See Section 6.0 Conditions and Mitigation Measures.
Wild and Scenic Rivers	Negligible	The Wild and Scenic Rivers Act (WSRA), (PL 90-543 as amended: 16 United States Code (U.S.C.) 1271-1287) established a method for providing federal protection for certain free-flowing rivers, preserving them and their immediate environments for the use and enjoyment of present and future generations. No Wild and Scenic Rivers are located in the project vicinity. No State of LA Natural & Scenic Rivers (Revised Statute [RS] 56:1847) or Historic & Scenic Rivers (RS 56:1856) are located in the project vicinity.	National Wild and Scenic Rivers https://www.rivers.gov/louisiana.php queried on September 7, 2018. LA Natural and Scenic Rivers Descriptions and Map http://www.wlf.louisiana.gov/louisiana-natural-and-scenic-rivers-descriptions-and-map queried on September 7, 2018. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	No mitigation required
Coastal Resources	Negligible	The Coastal Zone Management Act of 1972 (CZMA) encourages the management of coastal zone areas and provides grants to be used in maintaining coastal zone areas. It is intended to ensure that federal activities are consistent with state programs for the protection and, where, possible, enhancement of the nation's coastal zones. The project site is not located within the LA Coastal Zone. The USFWS regulates federal funding in Coastal Barrier Resources System (CBRS) units under the Coastal Barrier Resources Act (CBRA). CBRA protects undeveloped coastal barriers and related areas (i.e., Otherwise Protected Areas [OPAs]) by prohibiting or limiting direct or indirect Federal funding of projects that support development in these areas. The project site is not located within the CBRS.	LA Department of Natural Resources (LDNR) Office of Coastal Management Coastal Zone Boundary Map accessed online at http://www.dnr.louisiana.gov/assets/OCM/CoastalZoneBoundary/CZB2012/maps/Outreach_Map.pdf on September 7, 2018. USFWS CBRS Mapper (https://www.fws.gov/cbra/maps/mapper.html) referenced on September 7, 2018.	No mitigation required

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Air Quality	Negligible	The CAA requires the State of LA to adopt ambient air quality standards to protect the public from potentially harmful amounts of pollutants. The LDEQ has designated areas meeting the state's ambient air quality standards by their monitoring and modeling program efforts. Per LDEQ response, dated February 29, 2016, Caldwell Parish is classified as in attainment with all National Ambient Air Quality Standards (NAAQS) and has no general conformity determination obligations. The department has no objections and offered general comments (see Section 6.0 Conditions and Mitigation Measures). During construction, there is potential for short-term localized increase in vehicle emissions and dust particles. Overall impacts to air quality would be short-term and localized. No long-term reduction in air quality is expected once construction activities cease.	A SOV was drafted and submitted to the LDEQ by the FEMA on February 12, 2016. LDEQ response dated February 29, 2016. Nonattainment Status for each Parish by year, accessed online at: https://www3.epa.gov/airquality/greenbook/anayo_la.html on October 30, 2018. See Appendix C Agency Correspondence.	The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project. Vehicle operation times would be kept to a minimum. Area soils must be covered and/or wetted during construction to avoid generating airborne dust (i.e., particulate air emissions). To reduce potential short-term effects to air quality from construction-related activities, the contractor would be responsible for using BMPs to reduce fugitive dust generation and diesel emissions. Emissions from the burning of fuel by internal combustion engines would temporarily increase the levels of some of the criteria pollutants, including carbon dioxide (CO_2), nitrogen dioxide (NO_2), Ozone (O_3), and particulate matter less than 10 microns in dia. (PM_{10}), and non-criteria pollutants such as Volatile Organic Compounds (VOCs). To reduce these emissions, running times for fuel-burning equipment should be kept to a minimum and engines should be properly maintained. See Section 6.0 Conditions and Mitigation Measures.
Vegetation and Wildlife	Negligible	The Fish and Wildlife Coordination Act (FWCA) provides the basic authority for USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires Federal agencies that construct, license or permit water resource development projects to first consult with the Service (and the National Marine Fisheries Service [NMFS] in some instances) and State fish and wildlife agency regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. LA Department of Wildlife and Fisheries (LDWF) SOV response letter dated February 17, 2016, states after careful review of their database that no impacts to rare, threatened, or endangered species or critical habitats within LA's boundary are anticipated for the proposed project. No state or federal parks, wildlife refuges or scenic streams are known at the specified site within LA's boundaries. The site is in a rural area with native vegetation present. Impacts of the proposed project would be temporary, but native vegetation would re-emerge after construction. Native aquatic species under road crossings would continue to utilize streams.	A SOV was drafted and submitted to the LDWF by the FEMA on February 12, 2016. LDWF response letter dated February 17, 2016. As directed by the USFWS, FEMA utilized the LA ESA online technical assistance tool on August 28, 2018 (https://www.fws.gov/southeast/lafayette/project-review/) and submitted an SOV including the ESA Project Review and Guidance for Other Federal Trust Resources Report for both the north and south sections of the project to USFWS on September 6, 2018. USFWS response was received on September 20, 2018. See Appendix C Agency Correspondence.	Extreme care must be taken during the construction process through the appropriate use and maintenance of BMPs. If at any time Heritage tracked species are encountered within the project area, please contact the LA Natural Heritage Program (LNHP), now called the Wildlife Diversity Program (WDP), Data Manager at 225-765-2643. The Subrecipient must comply with the State of LA NWP Regional Conditions (February 2017), Regional Condition 9, Supplement to General Condition 2 - Aquatic Life Movement. To support compliance with General Condition 2 of the NWPs, culverts must be sufficiently sized to maintain expected high-water flows and be installed at a sufficient depth to maintain low flows to sustain the movement of aquatic species. See Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Threatened and Endangered Species (ESA Section 7)	Minor	The Endangered Species Act of 1973 (ESA) prohibits the taking of listed, threatened, and endangered species unless specifically authorized by permit from USFWS or NMFS. Under provisions of section 7(a)(2) of the ESA, a Federal agency that carries out, permits, licenses, funds, or otherwise authorizes activities that may affect a listed species must consult with the USFWS to ensure that its actions are not likely to jeopardize the continued existence of any listed species. The Northern Long-eared Bat (NLEB) (*Myotis septentrionalis*) is the single federally and/or state listed threatened/endangered species known to occur within Caldwell Parish. Per the USFWS LA ESA online technical assistance tool review dated September 6, 2018, the project, as proposed, generated a "not likely to adversely affect" (NLAA) determination for the NLEB. The USFWS concurred with FEMA's NLAA determination on September 20, 2018. The Alligator Snapping Turtle (AST) (*Macrochelys temminckii*) is proposed to be listed as a threatened or endangered species under ESA. AST is known to occur within Caldwell Parish. FEMA requested an informal conference with USFWS regarding potential impacts to the AST on April 13, 2022, USFWS responded on May 16, 2022, that they would review the documents provided; however, no further response has been received as of July 13, 2022. EHP has put forth proposed conditions to mitigation potential impacts to AST. Per LDWF LNHP, now called the WDP, response, dated February 17, 2016, no impacts to rare, threatened, or endangered species or critical habitats within LA's boundary are anticipated for the proposed project. No state or federal parks, wildlife refuges or scenic streams are known at the specified site within LA's boundaries. See Section 4.4 Threatened and Endangered Species for further discussion of impacts.	A SOV was drafted and submitted to the LDWF by the FEMA on February 12, 2016. LDWF response dated February 17, 2016. As directed by the USFWS, FEMA utilized the LA ESA online technical assistance tool on August 28, 2018 (https://www.fws.gov/southeast/lafayette/project-review/) and submitted an SOV including the ESA Project Review and Guidance for Other Federal Trust Resources Report for both the north and south sections of the project to USFWS on September 6, 2018. USFWS response was received on September 20, 2018. FEMA-EHP requested a conference with USFWS on April 13, 2022, USFWS stated they would review the documentation provided on May 16, 2022, no further response received as of July 13, 2022. See Appendix C Agency Correspondence.	To ensure continued ESA compliance, the Subrecipient must stop work and contact FEMA-EHP if 1) new information reveals that the action may affect listed species or designated critical habitat, 2) the action is modified in a manner that causes effects to listed species or designated critical habitat, or 3) a new species is listed or critical habitat designated. Additional consultation as a result of any of the above conditions or for changes not covered in the consultation should occur before changes are made and or finalized. The Subrecipient must conduct activities outside of the NLEB active season (April 1 to October 31) in areas where NLEBs are known to roost. Monitors during AST Nesting period of April 30th – July 31st: occurs at muddy and/or sandy-silt banks near water's edge and consists of woody debris, undercut banks, aquatic structures (e.g., tree root masses, stumps, submerged trees, etc.) and a riparian canopy. Incubation period for alligator snapping turtle nests is approximately 98 to 130 days. No removal of vegetation, deadheads/snags, or woody debris from either banks or undercut banks due to species selects areas with more aquatic structures to support important feeding areas for AST hatchlings & juveniles (i.e., tree root masses, stumps, submerged trees, etc.). Deadhead logs and fallen riparian woody debris, where present, provide refugia during low-water periods and resting areas for all life stages. Because of AST proclivity for bottom-dwelling - no waterway obstructions (i.e., no channelization which may reduce water-flows). However, a buffer might be considered per USFWS recommendations/suggestions. See Section 6.0 Conditions and Mitigation Measures.
Other Federally Protected Species	Negligible	The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712) prohibits pursuing; hunting; taking; capturing; killing; attempting to take, capture, or kill; possessing; offering for sale; selling; offering to purchase; purchasing; delivering for shipment; shipping; causing to be shipped; delivering for transportation; transporting; causing to be transported; carrying or causing to be carried by any means whatever; receiving for shipment, transportation, or carriage; or exporting; at any time or in any manner, any migratory bird or any part, nest, or egg of any such bird, that is included on the list of protected bird species, unless otherwise permitted by regulation, (General Provisions; Revised List of Migratory Birds 2013). The USFWS is responsible for enforcing the provisions of this Act.	As directed by the USFWS, FEMA utilized the LA ESA online technical assistance tool on August 28, 2018 (https://www.fws.gov/southeast/lafayette/project-review/) and submitted and SOV including the ESA Project Review and Guidance for Other Federal Trust Resources Report for both the north and south sections of the project to USFWS on September 6, 2018. USFWS response was received on September 20, 2018.	During the project impact analysis process developers should identify project-related impacts to migratory birds and the conservation measures that will be used to mitigate them. For additional Migratory Bird Conservation recommendations, guidance and tools to help reduce impacts to birds and their habitats please visit the LA Ecological Services Office (LESO) webpage: https://www.fws.gov/southeast/lafayette/migratory-birds/ and the Service's Migratory Bird Program Webpage (https://www.fws.gov/birds/bird-

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		The Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668c), enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs with the term "take" meaning to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The Mississippi River Flyway hosts the world's largest bird migration. Approximately 70% of migratory waterfowl in the U.S. use the flyway. The project area may provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*) which was officially removed from the List of Threatened & Endangered Species as of August 8, 2007. However, the bald eagle remains protected under the BGEPA (54 Stat. 250, as amended, 16 U.S.C. 668a-d) and the MBTA (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). LDWF has not collected comprehensive bald eagle survey data since 2008, and new active, inactive, or alternate nests may have been constructed within the proposed project area since that time. In southern LA parishes, eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Bald eagles may also nest in mature pine trees near large lakes in central and northern LA. The LA black bear (*Ursus americanus luteolus*) was listed as a threatened subspecies in 1992. Due to recovery, it was officially removed from the List of Endangered and Threatened Species on March 11, 2016 (effective April 11, 2016); critical habitat designation for this subspecies has also been withdrawn. Because the LA black bear is no longer protected under the ESA, consultation with the U.S. Fish and Wildlife Service (Service) is not required for this subspecies. The LA black bear remains protected under LA state law, and the LA Department of Wildlife and Fisheries (LDWF) will continue to actively manage this subspecies. Per the USFWS LA ESA online technical assistance tool review dated September 6, 2018, USFWS concluded that Migratory Bird Conservation Recommendations and Post-Delisting Conservation Considerations for the LA black bear be included as conditions to the project. See Section 6.0 Conditions and Mitigation Measures.	See Appendix C Agency Correspondence.	enthusiasts/threats-to-birds/collisions/communication-towers.php). The Subrecipient must review the National Bald Eagle Management (NBEM) Guidelines is available at: http://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the BGEPA. If a bald eagle nest occurs or is discovered within 660 ft. of the proposed project area, then USFWS requires an evaluation to be performed to determine whether the project is likely to disturb nesting bald eagles. The Subrecipient is required to conduct the evaluation on-line at: https://www.fws.gov/southeast/our-services/eagle-technical-assistance/. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary. All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to GOHSEP and FEMA as part of the permanent project files. Projects proposed in areas of the state that are inhabited by Black Bears should be designed to avoid adversely affecting this subspecies or its habitat. (A current LA black bear breeding area map is located at https://www.fws.gov/Lafayette/pdf/LA_Black_Bear_Breeding_Habitat_Map.pdf). For additional information regarding the LA black bear and project-specific conservation measures that may be required by the LDWF, please contact Maria Davidson (Large Carnivore Program Manager) at (337) 262-2080 or mdavidson@wlf.la.gov. Conservation measures for the LA black bear include 1) reducing the footprint of proposed actions to the maximum extent feasible, 2) avoiding impacts to potential den trees that are 36 in. or more in dia. at breast height implementing programs to prevent the habituation of bears to human-associated food sources (e.g., use of "bear-proof" waste disposal containers or daily removal of food and garbage), and 3) avoiding vegetative clearing during the black bear denning season (i.e., December 1 through April 30). The USFWS recommends that a qualified biologist inspect the proposed work site for the presence of

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				undocumented nesting colonies during the nesting season because some water bird colonies may change locations year-to-year. To minimize disturbance to colonial nesting birds please refer to the colonial nesting water bird guidance on the LESO Webpage (https://www.fws.gov /southeast/pdf/guidelines/colonial-water-birds-and-wading-birds-louisiana.pdf). See Section 6.0 Conditions and Mitigation Measures.

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Cultural Resources (National Historic Preservation Act Section 106)	Negligible	The consideration of impacts to historic and cultural resources is mandated under Section 101(b) 4 of the NEPA as implemented by 40 CFR Part 1501-1508. Section 106 of the NHPA requires Federal agencies to consider their effects on historic properties (i.e. historic and cultural resources, including American Indian Cultural Sites) and allow the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. Additionally, it is policy of the Federal government to consult with Indian Tribal Governments and a Government-to-Government basis as required in E.O. 13175. FEMA has chosen to address potential impacts to historic properties through the "Section 106 consultation process" of NHPA as implemented through 36 CFR Part 800. In order to fulfill its Section 106 responsibilities, FEMA has initiated consultation on this project in accordance with the LA State-Specific HMGP Programmatic Agreement (LA HMGP PA) dated January 31, 2011, between the LA State Historical Preservation Officer (SHPO), GOHSEP, Caddo Nation (CN), the Choctaw Nation of Oklahoma (CNO), the Alabama-Coushatta Tribe of Texas (ACTT), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), the Quapaw Tribe of Oklahoma (QTO), the Tunica-Biloxi Tribe of LA (TBTL), and the ACHP (https://www.fema.gov/pdf/hazard/hurricane/2005katrina/LA_HMGP%20PA.pdf;). The PA was created to streamline the Section 106 review process. FEMA determined that there are no historic properties as defined in 36 CFR 800.16(l) within the Area of Potential Effects (APE) for the Hurricane Creek Drainage Improvements project in Caldwell Parish, LA. Therefore, FEMA has determined a finding of No Historic Properties Affected for this Undertaking (i.e., No Impact to Cultural Resources). However, because the investigations were not exhaustive, the Subrecipient must comply with the NHPA conditions set forth in this EA. As such, FEMA may proceed with funding the undertaking assuming concurrence. The Subrecipient must comply with the NHPA conditions set for the in this EA.	FEMA submitted a finding of No Historic Properties Affected and an accompanying cultural resource management Draft report titled, *Negative Findings Report on Phase I Archeological Survey for the Hurricane Creek Drainage Improvements Project, Caldwell Parish, LA*, which was sent as an appendix to the LA SHPO and the affected tribes (CN, CNO, CTL, JBCI, MBCI, and TBTL) on February 3, 2016, for a 30-day consultation period. SHPO concurrence was received on March 14, 2016, the CNO tribe submitted written concurrence on March 3, 2016, and the JBCI submitted written concurrence on March 11, 2016. The remaining Tribes did not object within the regulatory timeframes. See Appendix C Agency Correspondence for the final version of the aforementioned report.	If human bone or unmarked grave(s) are present within the project area, compliance with the LA Unmarked Human Burial Sites Preservation Act (RS 8:671, et seq.) is required. The Subrecipient shall notify the law enforcement agency of the jurisdiction where the remains are located within twenty-four hours of the discovery. The Subrecipient shall also notify FEMA and LA Division of Archaeology (LDOA) at 225-342-8170 within seventy-two hours of the discovery. (LA Unmarked Human Burial Sites Preservation Act). If, during the course of work, archaeological artifacts (prehistoric or historic) are discovered, the Subrecipient shall stop work in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. The Subrecipient shall inform their GOSHEP State Applicant Liaison and Hazard Mitigation Assistance contacts at FEMA, who will in turn contact FEMA Historic Preservation (HP) staff. The Subrecipient will not proceed with work until FEMA HP completes consultation with the SHPO, and others as appropriate (Inadvertent Discovery Clause). See also Section 6.0 Conditions and Mitigation Measures.

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Environmental Justice (EO 12898) Socioeconomics	Negligible	E.O. 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was signed on March 11, 1994. The EO directs federal agencies to make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high and/or adverse human health, environmental, economic, and social effects of its programs, policies and activities on minority or low-income populations. According to the 2019 American Community Survey 5-Year Estimates, the total population of the project site located in Banks Springs and Columbia, LA (zip code 71418) is 1,136 with 43% White, 50% Black, and 3% Hispanic. The median household income is $22,188 and 57% of the population is below poverty level. The total population of the project site located in Grayson, LA (zip code 71435) is 3,979 with 81.4% White, 17.3% Black, and 1.4% Hispanic. The median household income is $38,859 and 15.2% of the population is below poverty level. The data indicates that the project areas contain minority and low-income populations. However, the proposed project would reduce flooding for all populations in the area, thus providing a benefit in the area and would not have a disproportionately high and/or adverse impact on low income or minority populations expected from the proposed project.	U.S. Census Bureau, American Fact Finder, Data for Caldwell Parish, LA accessed on September 7, 2019. http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	No mitigation required
Resource Conservation and Recovery Act (RCRA)	Negligible	The objectives of RCRA are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner. RCRA regulates the management of solid waste (e.g., garbage), hazardous waste, and underground storage tanks holding petroleum products or certain chemicals. Per NEPAssist database search, four (4) hazardous waste generator (RCRA) sites are located within 0.5 mi. of the sites. All four (4) sites appear to be small quantity hazardous generators associated with retail automotive repair services (3 sites) and a dentist's office (1 site). Per LDEQ response dated February 29, 2016, the department has no objections and offered general comments (see Section 6.0 Conditions and Mitigation Measures). Project involves excavation of soil and existing culvert and/or piping. All debris would be disposed of at a permitted landfill. All equipment and material storage would be located within the ROW.	A SOV was drafted and submitted to the LDEQ by the FEMA on February 12, 2016. LDEQ response dated February 29, 2016. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018. See Appendix C Agency Correspondence.	The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project. Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project, the Subrecipient shall handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies. If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's SPOC at 225-219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents. All debris would be disposed of at a permitted landfill. See Section 6.0 Conditions and Mitigation Measures.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Noise	Negligible	Noise is commonly defined as unwanted or unwelcome sound, and most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. Sound is federally regulated by the Noise Control Act of 1972, which charges the EPA with preparing guidelines for acceptable ambient noise levels. EPA guidelines, and those of many other federal agencies, state that outdoor sound levels in excess of 55 dB day-night average sound level (DNL) are "normally unacceptable" for noise-sensitive land uses including residences, schools, or hospitals. The number of residences, businesses, schools and houses of worship near the project areas may exceed 350 structures. Of those, four (4) are schools, two (2) are churches, and one (1) is a hospital within 0.5 mi. of the project areas. During the construction period, the potential exists for a short-term increase in noise levels. During construction, the area would be subject to high levels of disturbance from dust, noise, and vibration from normal conditions.	Noise is not addressed by Caldwell Parish, Banks Springs, LA, Town of Columbia, LA, or Village of Grayson, LA, local ordinances.	Mitigation and abatement measures will be required to reduce the noise levels to a range that would be considered acceptable. The Subrecipient must comply with any applicable local noise ordinances. See Section 6.0 Conditions and Mitigation Measures.
Public Safety and Access	Negligible	Congress passed the Occupational and Safety Health Act (OSHA) to ensure worker and workplace safety. The goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. During construction heavy equipment would be located in a populated area. Impacts to public safety and security would be minimized with mitigation measures, including following regulations.	No agency coordination	The contractor must place fencing around the work area perimeters to protect nearby residents from vehicular traffic. To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations and the USACE safety manual. The contractor must post appropriate signage and fencing to minimize potential adverse public safety concerns. See also Section 6.0 Conditions and Mitigation Measures.
Traffic and Transportation	Negligible	During construction phases, the area would not be accessible to the public; however, no effects to traffic and transportation would be expected since these activities will be occurring within the Hurricane Creek ROW away from public streets. Temporary roadway closures or detours may be necessary during construction work at proposed roadway crossings/culverts. Construction truck and equipment traffic volumes along the access routes would increase temporarily during work activities. However, the project would ultimately provide a benefit once completed, as roadways would remain open during storm events and ensure that adequate evacuation routes, streets, utilities, and public and emergency communications are maintained and available during and after a disaster.	No agency coordination	Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes. The contractor should implement traffic control measures, as necessary. See Section 6.0 Conditions and Mitigation Measures.
Hazardous Materials and Toxic Waste	Negligible	The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, authorizes EPA to response to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment, that might come from any source.	A SOV was drafted and submitted to the LDEQ by the FEMA on February 12, 2016. LDEQ response dated February 29, 2016.	The construction contractor shall comply with CERCLA hazardous substance release reporting requirements, if an applicable release should occur.

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		Superfund also grants EPA authority to force parties responsible for environmental contamination to clean it up or to reimburse response costs incurred by EPA. The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA regulations establish several types of reporting obligations for facilities that store or manage specified chemical, including chemicals used by the construction industry, such as solvents. The Toxic Substances Control Act (TSCA) allows EPA to collect data on chemicals to evaluate, assess, mitigate, and controls risks which may be posed by their manufacture, processing, and use. TSCA regulates polychlorinated biphenyls (PCBs) in electrical equipment, including pole-mounted transformers (PMTs). The PCB status of PMTs in the corridor is not known. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites already contaminated by releases of hazardous materials, wastes, or substances. Per NEPAssist database search, no CERCLA, TSCA, radiation, toxic release, or Brownfields sites have been identified within 0.5 mi. of the site. Per LDEQ response dated February 29, 2016, the department has no objections and offered general comments (see Section 6.0 Conditions and Mitigation Measures).	EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018. See Appendix C Agency Correspondence.	The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project. If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during this project, notification to LDEQ's SPOC at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents. If an oil discharge to water occurs, the construction contractor must notify the National Response Center (NRC) at 800-424-8802. Any renovation or remodeling must comply with LA Administrative Code (LAC) 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions. If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area. The LDNR Office of Conservation should be contacted at 225-342-5540 if any unregistered wells of any type are encountered during construction work. LA One Call should be contacted at 800-272-3020 at least 48 hours prior to commencing any subsurface operations. See Section 6.0 Conditions and Mitigation Measures.

Table 4. Affected Environment and Environmental Consequences Matrix
Considered Action Alternative: Straighten and Widen Hurricane Creek for Stormwater Drainage

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Geology and Soils	Negligible	The FPPA, Subtitle I of Title XV, Section 1539-1549, was enacted in 1981 and is intended to minimize the impact federal actions may have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. It assures that, to the extent possible, federal programs and policies are administered to be compatible with state and local farmland protection policies and programs. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. Per review of the NRCS Web Soil Survey, the soils mapped at the proposed project areas are predominately composed SH, FZ, SC, Tp, and Po, and are classified as a prime farmland soil. GY, OC, and Ru are also located in the project areas, but are not considered prime farmland soils. Potential exists for short-term, localized increase in soil erosion during construction for the considered action alternative. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the NRCS would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the NRCS would be required by the FEMA.	Implement construction stormwater BMPs; install silt fences/straw bales to reduce sedimentation. Area soils would be covered and/or wetted during construction. If fill is stored onsite, the contractor would be required to appropriately cover it.
Hydrology and Floodplains (EO 11988)	Moderate	E.O. 11988, Floodplain Management, requires Federal agencies to avoid direct or indirect support or development within the 100-year floodplain whenever there is a practicable alternative. FEMA's regulations for complying with EO 11988 are found at 44 CFR Part 9. Caldwell Parish enrolled in the NFIP on April 3, 1978 and the Village of Grayson enrolled in the NFIP on July 9, 1981. Per FIRM Panels 22021C0280C and 22021C0290C, dated September 5, 2012, the project is within portions of Zone X, outside the SFHA; Zone AE, area of 100-year flooding with BFE determined; and portions of regulatory floodways. Further impacts would be analyzed based on site plans. See Section 4.2 Hydrology and Floodplains, Hydrologic & Hydraulic (H&H) study reports (Appendix D) and 8-step process (Appendix E).	Caldwell Parish FIRM panels 22021C0280C and 22021C0290C, dated September 5, 2012.	The Subrecipient is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. New construction must be compliant with current codes and standards. Per 44 CFR 9.11(d), mitigation or minimization standards must be applied, where possible.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Wetlands (E.O. 11990)	Minor	E.O. 11990, Protection of Wetlands, directs Federal Agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands for federally funded projects. FEMA regulations for complying with EO 11990 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands. The USFWS – NWI map queried on October 17, 2017 at https://www.fws.gov/wetlands/Data/Mapper.html shows that mapped riverine wetlands are present in the project areas. Further impacts would be analyzed based on site plans. A wetland delineation would be required to assess any additional impacts to wetlands. Should this alternative project as proposed become the proposed project coordination with the USACE and EPA would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the USACE and EPA would be required by the FEMA. The Subrecipient would need to submit a permit application to the USACE. NWI map accessed on October 17, 2017 at: https://www.fws.gov/wetlands/Data/Mapper.html.	The Subrecipient must coordinate with USACE at the Vicksburg District Office to verify if jurisdictional waters of the U.S. occur onsite and which permits or authorizations, if any, are required.
Surface Water and Water Quality	Negligible	USACE regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to Parts 401 and 404 of the CWA. Section 402 of the CWA, entitled NPDES, authorizes and sets forth standards for state administered permitting programs regulating the discharge of pollutants into navigable waters within the state's jurisdiction. The USACE also regulates the building of structures in waters of the U.S. pursuant to Parts 9 and 10 of the RHA. Per the NEPAssist database, no impaired water bodies have been identified within five (5) mi. of the proposed Hurricane Creek project areas. Although there is a potential for short-term localized increase in sedimentation during construction, the considered action alternative would pose no significant long-term impacts to water quality. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the USACE, LDEQ, and EPA would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the USACE, LDEQ, and EPA would be required by the FEMA. The Subrecipient would need to submit a permit application to the USACE. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Groundwater	Negligible	SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The SSA Protection Program is authorized by Section 1424(e) of SDWA. The EPA defines a sole- or principal-source aquifer as one which supplies at least 50% of the drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate these areas can have no alternative drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. Per the NEPAssist database, no SSA have been identified in Caldwell Parish. The considered action alternative would not be expected to affect any groundwater. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the EPA and LDEQ would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the EPA and LDEQ would be required by the FEMA. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	All precautions should be observed to protect the groundwater of the region. BMPs should be implemented to ensure groundwater is protected.
Wild and Scenic River	Negligible	The WSRA (P. L. 90-543 as amended: 16 U.S.C. 1271-1287) established a method for providing federal protection for certain free-flowing rivers, preserving them and their immediate environments for the use and enjoyment of present and future generations. No Wild and Scenic Rivers are located in the project vicinity. No State of LA Natural & Scenic Rivers (RS 56:1847) or Historic & Scenic Rivers (RS 56:1856) are located in the project vicinity.	National Wild and Scenic Rivers https://www.rivers.gov/louisiana.php queried on September 5, 2018. LA Natural and Scenic Rivers Descriptions and Map http://www.wlf.louisiana.gov/louisiana-natural-and-scenic-rivers-descriptions-and-map queried on April 1, 2016. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	No mitigation required
Coastal Resources	Negligible	The CZMA encourages the management of coastal zone areas and provides grants to be used in maintaining coastal zone areas. It is intended to ensure that federal activities are consistent with state programs for the protection and, where, possible, enhancement of the nation's coastal zones. The project site is not located within the LA Coastal Zone and does not require a Coastal Use Permit (CUP). The USFWS regulates federal funding in CBRS units under the CBRA. This Act protects undeveloped coastal barriers and related areas (i.e., OPAs) by prohibiting or limiting direct or indirect Federal funding of projects that support development in these areas. The project is not located within the CBRS.	LDNR Office of Coastal Management Coastal Zone Boundary Map accessed online at http://www.dnr.louisiana.gov/assets/OCM/CoastalZoneBoundary/CZB2012/maps/Outreach_Map.pdf on September 7, 2018. USFWS CBRS Mapper (https://www.fws.gov/cbra/maps/mapper.html) referenced on September 7, 2018.	None

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Air Quality	Negligible	The CAA requires the State of LA to adopt ambient air quality standards to protect the public from potentially harmful amounts of pollutants. The LDEQ has designated areas meeting the state's ambient air quality standards by their monitoring and modeling program efforts. Currently, Caldwell Parish is classified as in attainment with all NAAQS and has no general conformity determination obligations. No long-term reduction in air quality is expected after construction activities cease. During construction, there is potential for short-term localized increase in vehicle emissions and dust particles for the considered action alternative.	Coordination with the LDEQ would be required by the FEMA. Nonattainment Status for each Parish by year, accessed online at: https://www3.epa.gov/airquality/greenbook/anayo_la.html on October 30, 2018.	Vehicle operation times would be kept to a minimum. Area soils must be covered and/or wetted during construction to avoid generating airborne dust (i.e., particulate air emissions). To reduce potential short-term effects to air quality from construction-related activities, the contractor would be responsible for using BMPs to reduce fugitive dust generation and diesel emissions. Emissions from the burning of fuel by internal combustion engines would temporarily increase the levels of some of the criteria pollutants, including CO_2, NO_2, O_3, and PM_{10}, and non-criteria pollutants such as VOCs. To reduce these emissions, running times for fuel-burning equipment should be kept to a minimum and engines should be properly maintained.
Vegetation and Wildlife	Negligible	FWCA provides the basic authority for USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires Federal agencies that construct, license or permit water resource development projects to first consult with the Service (and the NMFS in some instances) and State fish and wildlife agency regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. The site is in a rural area with native vegetation present. Impacts of the considered action alternative project would be temporary, but native vegetation would re-emerge after construction. Native aquatic species under road crossings would continue to utilize streams. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the LDWF and USFWS would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the LDWF and USFWS would be required by the FEMA.	Extreme care must be taken during the construction process through the appropriate use and maintenance of BMPs.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Threatened and Endangered Species (ESA Section 7)	Minor	The ESA of 1973 prohibits the taking of listed, threatened, and endangered species unless specifically authorized by permit from USFWS or the NMFS. Under provisions of section 7(a)(2) of the ESA, a Federal agency that carries out, permits, licenses, funds, or otherwise authorizes activities that may affect a listed species must consult with the USFWS to ensure that its actions are not likely to jeopardize the continued existence of any listed species. The NLEB (*Myotis septentrionalis*) is the single federally and/or state listed threatened/endangered species known to occur within Caldwell Parish. The Alligator Snapping Turtle (AST) (*Macrochelys temminckii*) is proposed to be listed as a threatened or endangered species under ESA. AST is known to occur within Caldwell Parish. No state or federal parks, wildlife refuges or scenic streams are known at the specified site within LA's boundaries. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the LDWF and USFWS would be required by the FEMA and impacts would be reassessed based on the agency responses. See Section 4.4 Threatened and Endangered Species for further discussion of impacts.	Coordination with the LDWF and USFWS would be required by the FEMA.	None

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Other Federally Protected Species	Negligible	The MBTA of 1918 (16 U.S.C. 703-712) prohibits pursuing; hunting; taking; capturing; killing; attempting to take, capture, or kill; possessing; offering for sale; selling; offering to purchase; purchasing; delivering for shipment; shipping; causing to be shipped; delivering for transportation; transporting; causing to be transported; carrying or causing to be carried by any means whatever; receiving for shipment, transportation, or carriage; or exporting; at any time or in any manner, any migratory bird or any part, nest, or egg of any such bird, that is included on the list of protected bird species, unless otherwise permitted by regulation, (General Provisions; Revised List of Migratory Birds 2013). The USFWS is responsible for enforcing the provisions of this Act. The BGEPA (16 U.S.C. 668-668c), enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs with the term "take" meaning to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The Mississippi River Flyway hosts the world's largest bird migration. Approximately 70% of migratory waterfowl in the U.S. use the flyway. The project area may provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*) which was officially removed from the List of Threatened & Endangered Species as of August 8, 2007. However, the bald eagle remains protected under the BGEPA (54 Stat. 250, as amended, 16 U.S.C. 668a-d) and the MBTA (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). LDWF has not collected comprehensive bald eagle survey data since 2008, and new active, inactive, or alternate nests may have been constructed within the proposed project area since that time. In southern LA parishes, eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Bald eagles may also nest in mature pine trees near large lakes in central and northern LA. The LA black bear (*Ursus americanus luteolus*) was listed as a threatened subspecies in 1992. Due to recovery, it was officially removed from the List of Endangered and Threatened Species on March 11, 2016 (effective April 11, 2016); critical habitat designation for this subspecies has also been withdrawn. Because the LA black bear is no longer protected under the ESA, consultation with the Service is not required for this subspecies. The LA black bear remains protected under LA state law, and the LDWF will continue to actively manage this subspecies. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the USFWS and LDWF would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the USFWS and LDWF would be required by the FEMA.	No mitigation required

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Cultural Resources (National Historic Preservation Act Section 106)	Negligible	FEMA determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE for the Hurricane Creek Drainage Improvements project in Caldwell Parish, LA. Therefore, FEMA has determined a finding of No Historic Properties Affected for this Undertaking (i.e., No Impact to Cultural Resources). However, because the investigations were not exhaustive, the Subrecipient must comply with the NHPA conditions set forth in this EA. Should this alternative project as proposed become the proposed project coordination with the SHPO would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the SHPO would be required by the FEMA.	No mitigation required
Environmental Justice (E.O. 12898) Socioeconomics	Negligible	E.O. 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was signed on February 11, 1994. The EO directs federal agencies to make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high and/or adverse human health, environmental, economic, and social effects of its programs, policies and activities on minority or low-income populations. According to the 2019 American Community Survey 5-Year Estimates, the total population of the project site located in Banks Springs and Columbia, LA (zip code 71418) is 1,136 with 43% White, 50% Black, and 3% Hispanic. The median household income is $22,188 and 57% of the population is below poverty level. The total population of the project site located in Grayson, LA (zip code 71435) is 3,979 with 81.4% White, 17.3% Black, and 1.4% Hispanic. The median household income is $38,859 and 15.2% of the population is below poverty level. Further impacts would be analyzed based on site plans.	U.S. Census Bureau, American Fact Finder, Data for Caldwell Parish, LA accessed on September 7, 2019. http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	No mitigation required
Resource Conservation and Recovery Act (RCRA)	Negligible	The objectives of RCRA are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner. RCRA regulates the management of solid waste (e.g., garbage), hazardous waste, and underground storage tanks holding petroleum products or certain chemicals. Per NEPAssist database search, four (4) hazardous waste generator (RCRA) sites are located within 0.5 mi. of the sites. All four (4) sites appear to be small-quantity hazardous waste generators associated with retail automotive repair services (3 sites) and a dentist's office (1 site). The project would involve excavation of soil and existing culvert and/or piping. All debris would be disposed of at a permitted landfill. All equipment and material storage would be located within the ROW. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the EPA and LDEQ would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the EPA and LDEQ would be required by the FEMA. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project. Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project, the Subrecipient shall handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies. All debris would be disposed of at a permitted landfill.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Noise	Negligible	Noise is commonly defined as unwanted or unwelcome sound, and most commonly measured in dB on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. Sound is federally regulated by the Noise Control Act of 1972, which charges the EPA with preparing guidelines for acceptable ambient noise levels. EPA guidelines, and those of many other federal agencies, state that outdoor sound levels in excess of 55 dB DNL are "normally unacceptable" for noise-sensitive land uses including residences, schools, or hospitals. The number of residences, businesses, schools and houses of worship near the project areas may exceed 350 structures. Of those, four (4) are schools, two (2) are churches, and one (1) is a hospital within 0.5 mi. of the project areas. Construction associated with the considered action alternative may result in a short-term increase in noise levels until construction is completed. During construction, the area would be subject to high levels of disturbance from dust, noise, and vibration from normal conditions.	Noise is not addressed by Caldwell Parish, Banks Springs, LA, Town of Columbia, LA, or Village of Grayson, LA, local ordinances.	Mitigation and abatement measures will be required to reduce the noise levels to a range that would be considered acceptable. The Subrecipient must comply with any applicable local noise ordinances.
Public Safety and Access	Negligible	Congress passed the Occupational Safety and Health Act (OSHA) to ensure worker and workplace safety. The goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. During construction heavy equipment would be located in a populated area. Impacts to public safety and security would be minimized with mitigation measures, including following OSHA regulations. Further impacts would be analyzed based on site plans.	Compliance with all applicable OSHA worker safety regulations would be required if the considered action alternative were implemented.	The contractor must place fencing around the work area perimeters to protect nearby residents from vehicular traffic. To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations and the USACE safety manual. The contractor must post appropriate signage and fencing to minimize potential adverse public safety concerns.
Traffic and Transportation	Negligible	Traffic volumes within and around the project area would increase temporarily during work activities. Further impacts would be analyzed based on site plans.	No agency coordination	Appropriate signage and barriers should be in place, as appropriate, prior to construction activities to alert pedestrians, motorists, and nearby residents of project activities and to protect them from traffic pattern changes. The contractor should implement traffic control measures, as necessary.

Resource Area	Impact	Impact Summary	Agency Coordination / Permits	Mitigation/Conditions
Hazardous Materials and Toxic Waste	Negligible	The CERCLA, commonly known as Superfund, authorizes EPA to response to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment, that might come from any source. Superfund also grants EPA authority to force parties responsible for environmental contamination to clean it up or to reimburse response costs incurred by EPA. The SARA 1986 created the EPCRA. EPCRA regulations establish several types of reporting obligations for facilities that store or manage specified chemical, including chemicals used by the construction industry, such as solvents. The TSCA allows EPA to collect data on chemicals to evaluate, assess, mitigate, and controls risks which may be posed by their manufacture, processing, and use. TSCA regulates PCBs in electrical equipment, including PMTs which are present in and near the project corridor. The PCB status of PMTs in the corridor is not known. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites already contaminated by releases of hazardous materials, wastes, or substances. Per NEPAssist database search, no CERCLA, TSCA, radiation, toxic release, or Brownfields sites have been identified within 0.5 mi. of the site. Further impacts would be analyzed based on site plans. Should this alternative project as proposed become the proposed project coordination with the EPA and LDEQ would be required by the FEMA and impacts would be reassessed based on the agency responses.	Coordination with the EPA and LDEQ would be required by the FEMA. EPA NEPAssist Tool (http://nepassisttool.epa.gov/nepassist/entry.aspx.) accessed on September 7, 2018.	The construction contractor shall comply with CERCLA hazardous substance release reporting requirements if an applicable release should occur. If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

4.2 Hydrology and Floodplains (E.O. 11988)

Executive Order (E.O.) 11988 (Floodplain Management) requires federal agencies to avoid or minimize development in the floodplain except when there are no practicable alternatives. A floodplain is defined as the lowland and relatively flat areas adjoining inland and coastal waters, including at a minimum that area subject to a 1% or greater chance of flooding in any given year. FEMA complies with E.O. 11988 through 44 CFR Part 9, Floodplain Management and Protection of Wetlands. FEMA uses Digital Flood Insurance Rate Maps (DFIRMs) created by the NFIP as the best available flood data.

Caldwell Parish enrolled in the NFIP on April 3, 1978, and the Village of Grayson enrolled in the NFIP on July 9, 1981. According to the FEMA FIRM Panel 22021C0280C, dated September 5, 2012, the project site for PA 1, the northern portion of Hurricane Creek, is located within Zone X, outside the SFHA. According to the FEMA FIRM Panels 22021C0280C and 22021C0290C, dated September 5, 2012, the project site for PA 2, the southern portion of Hurricane Creek, is located within Zone X, outside the SFHA, and Zone AE, which is the 100-year floodplain or an area subjected by the 1% annual chance flood with BFE determined. Portions of this section are also located within a regulatory floodway. For PA 3, the Caldwell High School Tributary, the site is located within Zone AE per the FEMA FIRM Panel 22021C0290C, dated September 5, 2012. Portions of this site are also located within a regulatory floodway. For PA 4, the Hanchey Rd. Tributary, the site is located within Zone X, outside the SFHA, and Zone AE, per the FEMA FIRM Panel 22021C0290C, dated September 5, 2012. Portions of this section are also located within a regulatory floodway. Even though portions of the project area are not in the flood zone, they are still subjected to local flooding.

A regulatory floodway is defined by the NFIP (44 CFR 59.1) as the channel of a river or other watercourse where the adjacent land areas must be reserved in order to discharge the base flood without cumulatively increasing the WSE more than a designated height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations. Floodplain management criteria for flood-prone areas include 44 CFR 60.3.(d)(3) which states that the community shall "prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;" furthermore, 44 CFR 9.11(d)(4) states that "there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the WSE of the base flood more than 1 ft. at any point within the community."

When a floodway is shown on the FIRM in the vicinity of a proposed project, the community is required to prohibit encroachments (fill, new construction, or other improvements) unless it has been demonstrated through hydrologic and hydraulic analyses that the proposed development

would not result in any increase in flood levels within the community during the occurrence of the base flood discharge. In the case where a proposed project increases the BFE more than 0.0 ft. in Zone AE (with floodway), or 1.0 ft. in Zone AE (no floodway), a Conditional Letter of Map Revision (CLOMR) is required. A CLOMR is a letter from FEMA commenting on whether a proposed project, if built as proposed, would meet minimum NFIP standards and documents the potential changes to the floodplain, floodway, and BFE relative to the proposed project. It is also FEMA's comment on the effects that a proposed project would have on the FIRM.

In 1976, the Hurricane Creek channel was designed for the 10-year storm event. The LDOTD cleared the creek and rechannelized the portion immediately east of the high school to LA Hwy. 165 and beyond. The existing bottom width of the creek still reflects this design. The current floodplain width increases as the creek continues downstream. In the residential area of Banks Springs, approximately 2,050 LF of the creek was designed for the 10-year storm event. During relatively small storm events, this particular area of the creek floods due to inadequate road crossings, reduced cross sections, and restrictions caused by heavy brush and trees.

A hydrology and hydraulic (H&H) evaluation for the project site is documented in *Hydrology and Hydraulic Study, Hurricane Creek, Caldwell Parish, Louisiana,* prepared by McManus Consulting Engineers, Inc., April 2014, revised March 2015 (March 2015 H&H study report). Per the March 2015 H&H study report, drainage watersheds for the portions of Hurricane Creek in the project area are 1.40 mi^2 (Sub-Basin I) and 4.80 mi^2 (Sub-Basin II). The 25-year total peak discharge for both sub-basins is 1,723 cubic feet per second (CFS), the 50-year total peak discharge for both sub-basins is 1,943 CFS, and the 100-year total peak discharge for both sub-basins is 2,135 CFS. Existing culverts under four (4) roadways (i.e., Sidney Ln., Rushing St., Anding Heights Rd., and LA Hwy. 126) were analyzed along with the existing creek conditions. The hydraulic modeling results indicated that WSE may overtop Martin Luther St., Garsee Rd., and Sidney Ln. with flooding associated with intensity exceeding or equal to the 5-year statistical return interval. Aside from Garsee Rd., culvert size is not the primary cause of flooding issues in the area. There is reduced channel capacity at the cross section between Martin Luther St. and Sidney Ln. which is altered by heavy brush and trees, and the winding of the creek in that area. Supporting modeling results for existing conditions are summarized in the March 2015 H&H study report (Appendix D).

Modeling issues encountered during the project analysis would later be addressed with a modified hydraulic analysis followed by a CLOMR. The USACE Hydrologic Engineering Center (HEC) issued the modeling computer program called HEC-2, Water Surface Profiles, that was used in the effective *Caldwell Parish, Louisiana, and Incorporated Areas Flood Insurance Study (FIS)*, dated September 5, 2012, for the area. HEC-2 has been superseded by the USACE HEC's River Analysis System (HEC-RAS). The flood hazard information along Hurricane Creek would be revised with a CLOMR. An explanation of this process and the results are described below.

***No Action Alternative*:** The No Action Alternative would not improve drainage or reduce flooding within the project area, nor would it decrease the risk of losses due to flooding of the properties in the vicinity. This alternative would not provide any type of protection to residents of the area during peak flow events, future storms, or other emergency situations. Additionally, access to the area would be disrupted from street flooding and roads would continue to flood causing further damage to the community. Also, further deterioration and likely failure of culverts would require

additional work to be conducted later. The community would continue to experience flooding in the project area with water projected to overtop the road crossings by as much as 1.83 ft. for the 100-year flood at Sidney Ln. Historical flooding in 1976 was as high as 4 ft. above the channel banks near the confluence of Hurricane Creek and Bushy Creek, approximately 4 mi. downstream of the project area. This flooding could result in damage to property and hazardous conditions for not only the residents of Caldwell Parish, but also businesses and emergency responders who utilize the roadways and live in the area. Moderate ongoing impacts to floodplains are anticipated under the No Action Alternative due to localized flooding in the rural area, with associated erosional and scour losses, forcing these roads to be by-passed during periods of flooding. Water flow would be restricted causing the stream to back up and overtop the banks which would contribute to erosion, bank wash, and altered, degraded, and further reduction in the capacity of the channel. If the creek is not rechanneled and reshaped, flooding would increase in frequency and severity.

***Preferred Action Alternative*:** Based on a comparison of proposed road crossing elevations over Hurricane Creek with proposed Hurricane Creek channel WSE presented in the earlier H&H study report of March 2015, anticipated overtopping water depths over Garsee Rd. and Sidney Ln. associated with the 2-, 5-, 10-, 25-, 50-, and 100-year rainfall events would be significantly reduced or eliminated. For the 2-, 5-, 10-, and 25-year rainfall events, the proposed project would result in increased WSE immediately upstream of Martin Luther St., ranging from an increase of 0.91 ft. for the 2-year flood event to 0.13 ft. for the 25-year flood event, compared to existing conditions. For the 50- and 100-year rainfall events, the proposed project would result in a decrease of WSE immediately upstream of Martin Luther St., compared to existing conditions. For the 2-, 5-, 10-, 25-, 50-, and 100-year rainfall events, the proposed drainage system improvements to the Hurricane Creek channel and road crossing culverts would reduce WSE compared to existing conditions along the open channel of Hurricane Creek throughout the length of the project area. Supporting modeling results are summarized in the March 2015 H&H study report.

An updated study using the improved methods of the more recent modeling software, HEC-RAS, was used for the new floodway analysis, computation of new updated WSEs, and establishment of a new regulatory floodway. This was documented and presented in an additional hydraulic study report, dated March 14, 2018, and revised September 2021, prepared for McManus Consulting Engineers, Inc., titled *Hurricane Creek: FEMA Hydraulic Analysis* (September 2021 hydraulic study report), by Aquaveo, which documented the methodology used for constructing the hydraulic model.

The updated modeling program showed results of the effective model from the FIS, existing conditions, and proposed conditions. See Table 5 for comparisons between the reported WSE in the FIS and corresponding computed WSE from the existing and proposed HEC-RAS models. Results of the effective model from the FIS are shown as the 100-year WSE Reported in the 2012 Effective FIS. The new model, called the duplicate effective model (or corrected effective model), corrects the effective model by fixing technical errors, adds cross sections, more detailed topography, and must not reflect man-made changes since the date of the effective model. These results are displayed as the 100-year WSE Computed in Existing 2021 Model Revising the Effective FIS. The proposed conditions model is the modified version of the existing conditions model and includes modifications to reflect the project. These results are displayed as 100-year WSE Computed in Proposed 2021 Model.

Comparisons were made between the 100-year WSE Reported in the 2012 Effective FIS and the 100-year WSE Computed in Existing 2021 Model Revising the Effective FIS for the lettered cross sections. As seen in Table 5, most of the computed existing conditions for WSE are within at least 0.6 ft. of the reported WSE from the effective FIS. One exception is cross section P (corresponding cross section 11477.377), which showed a difference of 1.9 ft. It is likely that the differences in the channel or floodplain for this area existed when the HEC-2 model was created back in the 1970s, such as different amounts of vegetation in the floodplain or a different channel configuration. The existing FIRM results (100-year WSE Reported in the 2012 Effective FIS) cannot be copied in a hydraulic model or achieved. In this case, the published FIS data for the 100-year flood is being challenged and the findings are reflected in the revised hydraulic analysis resulting in revisions to the FIRMs.

The results of the proposed conditions model (100-year WSE Computed in Proposed 2021 Model) were compared to the existing conditions model (100-year WSE Computed in Existing 2021 Model Revising the Effective FIS) to determine if there would be an increase in elevation of the base flood or floodway elevations at any existing or new cross section. The results showed a decrease in all values between the existing model and proposed model. More detailed information is provided in the September 2021 hydraulic study report in Appendix D.

Table 5. Reported and Computed WSE Comparisons.

Effective Lettered Cross Section Name	Corresponding Model Cross Section	100-year WSE Reported in 2012 Effective FIS (ft.)	100-year WSE Computed in Existing 2021 Model Revising the Effective FIS (ft.)	100-year WSE Computed in Proposed 2021 Model (ft.)	Increases in WSE due to Project
L	3046.557	158.8	158.2	158.0	No
M	4529.759	161.1	160.5	160.3	No
N	8222.466	167.9	168.1	168.0	No
O	9938.179	173.2	172.3	172.2	No
P	11477.377	174.7	176.6	176.4	No
Q	12124.864	177.3	176.9	176.8	No
R	12644.166	178.1	178.0	177.9	No

The original floodway extents were used as a guide during the sensitivity/calibration effort for the model and where possible the newly computed floodway was kept within or equal to the locally accepted floodway extents. The results of the model showed that the new computed floodway from the existing conditions model was wider than the original floodway in some areas. These adaptations of the model considered areas that were less developed or more naturally undisturbed for the increased width and were necessary to comply with the FEMA regulation that surcharges caused by encroachments which are greater than 1 ft. are non-compliant. NFIP regulations allow up to a 1 ft. rise in flood stage when designating the floodway. As shown for the existing model, the differences in reported WSE for these cross sections between the normal and floodway encroachment run are around 0.9 ft. higher. Differences between the normal proposed run and the floodway encroachment run are slightly lower, with most around 0.8 ft. higher. Accordingly, the floodway encroachment run for both the existing and proposed models do not have greater than a 1 ft. rise at any cross section. A summary of results for the floodway encroachment analysis performed on the existing and proposed models can be seen in Table 6.

Table 6. Computed Values Compared to the Floodway Encroachments.

HEC-RAS Model Cross Section	100-year WSE Computed in Existing 2021 Model Revising the Effective FIS (ft.)	100-year WSE Computed in Existing 2021 Model Floodway Run (ft.)	Difference (ft.)	100-year WSE Computed in Proposed 2021 Model (ft.)	100-year WSE Computed in Proposed 2021 Model Floodway Run (ft.)	Difference (ft.)
3046.557	158.2	158.9	0.7	158.0	158.6	0.7
4529.759	160.5	161.3	0.8	160.3	161.1	0.8
8222.466	168.1	168.8	0.7	168.0	168.6	0.6
9938.179	172.3	172.7	0.4	172.2	172.5	0.3
11477.377	176.6	177.4	0.8	176.4	177.2	0.8
12124.864	176.9	177.8	0.9	176.8	177.6	0.8
12644.166	178.0	178.4	0.4	177.9	178.2	0.3

Per the September 2021 hydraulic study report, the derived floodway extents are different than the effective floodway extents in some areas causing the floodway to bulge out much wider than the previously accepted floodway. In addition, there are floodway areas that are narrower than the previously accepted floodway. Even though precautionary measures were taken to try and remain within the effective floodway boundaries, in order to comply with the no rise criteria, the results indicate that the floodway would extend further into the floodplain to keep the WSE surcharges below 1 ft. Table 6 shows that the new floodway was delineated in accordance with NFIP requirements. Under the new modified floodway, the proposed project would not cause any increase in WSE.

The published FIS data was challenged and resulted in a CLOMR which affected the regulatory floodway and effective BFE as a result of the revised hydraulic analysis. The September 2021 hydraulic study report was prepared to support a proposed CLOMR and the results were submitted to FEMA. The floodplains and floodways were delineated based on those results and annotated FIRMs and topographic maps were created for the CLOMR submittal request to FEMA. The September 2021 hydraulic analysis demonstrated that the proposed project would not raise the BFE compared to the existing conditions. Therefore, the proposed project would not increase the WSE of the base flood when comparing the pre-project and post-project conditions. The differences in the derived floodway extents and floodplain boundaries are presented in the completed FIRM and topographic maps of the September 2021 hydraulic report in Appendix D.

Based on the results comparing existing conditions with the project's proposed conditions shown in Tables 5 and 6, in all circumstances upon completion of the project the proposed elevation of the 1% flood would decrease, and by pre-adopting the revised flood risks per 44 CFR 65.12, the community would be keeping their floodway and floodplains properly managed per FEMA regulation 44 CFR 9.11(d)(4). The proposed project also satisfies the requirements of 44 CFR Section 65.12 of the NFIP regulations. A request for conditional approval of map change was initiated on July 21, 2020. Compliance with 44 CFR 65.12, revisions of FIRMs to reflect BFE caused by proposed encroachments, was achieved with the CLOMR on May 28, 2021. The flood hazard information along Hurricane Creek would be revised with CLOMR 20-06-3058-R. These

changes within the SFHA must be requested since the proposed changes could have an effect on the existing regulatory floodway and effective BFE.

A CLOMR does not amend or revise the effective FIRM, but upon submission and approval of certified as-built documentation, a letter of map revision (LOMR) may be issued by FEMA to revise the effective FIRM. The CLOMR would support a revision to FIRM Panels 22021C0280C and 22021C0290C, based on the results of September 2021 hydraulic report. The determination documents for Caldwell Parish Affected Map Panels 22021C0280C and 22021C0290C note the summary of impacts to the flood hazard data for Caldwell Parish (Unincorporated Areas, 20-06-3058R-220044) and the Village of Grayson (20-06-3058R-220329) and are found in Appendix D. Per the summary table for Caldwell Parish and the Village of Grayson panels, there are decreases in the proposed flooding and no increases in BFEs. These documents also show the changes in the BFEs in the BFE Comparison Table.

Per the September 2021 hydraulic study report, the proposed changes to Hurricane Creek are not expected to largely impact the peak flows and volume of runoff for the area. Additionally, the land use has not changed dramatically since the last study of the creek was performed. Therefore, a hydrologic analysis was not completed for the additional study report as it should only be revised and updated if a statistically significant difference was found in the results of the new study. Since the proposed project would be consistent with the historical width of the creek, the flow rates from the previous hydrologic study (March 2015 H&H study report) were applied to the hydraulic model. There was no modification to the hydrology between the effective and the existing/proposed hydrology.

FEMA utilizes the decision process described in 44 CFR Part 9, referred to as the 8-Step Process, to ensure that the action is consistent with E.O. 11988. The 8-Step Process has been applied to this mitigation project and is described in Appendix E. This action must be coordinated with the local floodplain manager as well as comply with local floodplain ordinances. The overall impact from the preferred action on the hydrology and floodplain was reflected during the CLOMR process. The proposed project would lower the BFEs from the existing conditions and reduce flood risk in comparison to the current conditions. Under the Preferred Action Alternative, indirect short-term impacts to the surrounding area could occur during construction. FEMA finds there is no practicable alternative to avoiding moderate impacts to the floodplain. The improvements are needed to control flooding. Construction BMPs would be included into the daily construction activities. See Section 6.0 Conditions and Mitigation Measures.

The Subrecipient is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities.

Per 44 CFR 9.11(d), mitigation or minimization standards must be applied, where possible.

Per 44 CFR 9.11(d)(4), there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed

development, when combined with all other existing and anticipated development, will not increase the WSE of the base flood more than 1 ft. at any point within the community.

Per 44 CFR 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the NFIP.

Should the site plans (including drainage design) change, the Subrecipient must submit changes to FEMA-EHP for review and approval prior to the start of construction.

New construction must be compliant with current codes and standards. All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to GOHSEP and FEMA as part of the permanent project files.

Considered Action Alternative: The Considered Action Alternative involves straightening the drainage channel by removing the meandering of the natural flow of Hurricane Creek and widening the channel to make it a true canal for stormwater drainage. This project would require the purchase of a wider ROW, as well as houses or other structures that currently flood or whose locations lie close to the creek. The proposed channel is approximately 2.9 mi. long. Based on an October 25, 2018 review of online Caldwell Parish Tax Assessor records, it is estimated that at least 10 homes would be purchased and removed, and 50 ft. of ROW purchased from approximately 50 landowners.

This alternative would require property acquisitions that would be determined later. It is possible that additional culvert and bridge crossings would have to be installed in areas for access. Additionally, if this alternative were to become the Preferred Action Alternative, then a supplemental H&H would be required and resubmitted for review and approval. Selection and implementation of this alternative would also require additional studies to ensure that any proposed design would comply with 44 CFR 9.11(d)(4) and that 100-year flood elevations would not increase in the area within a designated regulatory floodway.

The Subrecipient would be required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. New construction must be compliant with current codes and standards. Per 44 CFR 9.11(d), mitigation or minimization standards must be applied, where possible.

4.3 Wetlands and Waters of the United States

E.O. 11990 (Protection of Wetlands) directs federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands for federally funded projects. FEMA regulations for complying with E.O. 11990 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands.

USACE, through its permit program, regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to Sections 401 and 404 of the CWA. The CWA regulates water quality of all discharges into waters of the U.S. Both wetlands and “dry washes” (channels that carry intermittent or seasonal flow) are considered waters of the U.S.

Waters of the U.S. are defined in 33 CFR 328.3 and include a broad scope of surface waters. Jurisdictional wetlands, a subset of waters of the U.S., are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328.3[b]) (Regulatory Programs of the Corps of Engineers 1986). Jurisdictional wetland determinations are regulated by the USACE pursuant to the CWA.

Per the USFWS NWI Mapper queried on October 17, 2017, the north portion (Figure 5), middle portion (Figure 6), and southern portion (Figures 7 and 8) of the project area show that mapped riverine features are present within the channel. This classification is based on aerial imagery and thus this area may or may not be classified as a wetland during a jurisdictional wetland determination. See Figures 5 thru 8 for a site overview utilizing the USFWS wetlands mapper tool.

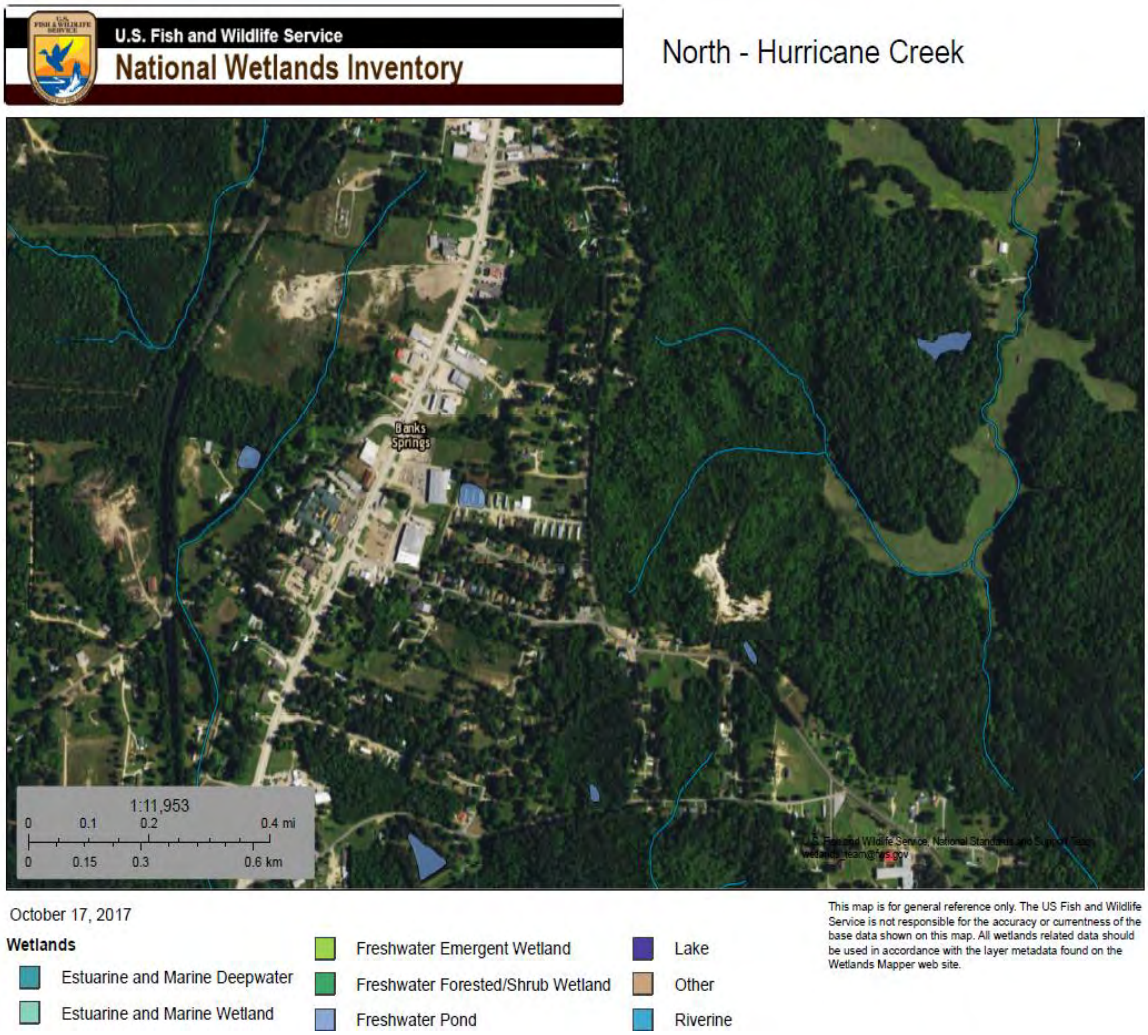

Figure 5. NWI Map of the Northern Portion of the Project Site (PA 1).

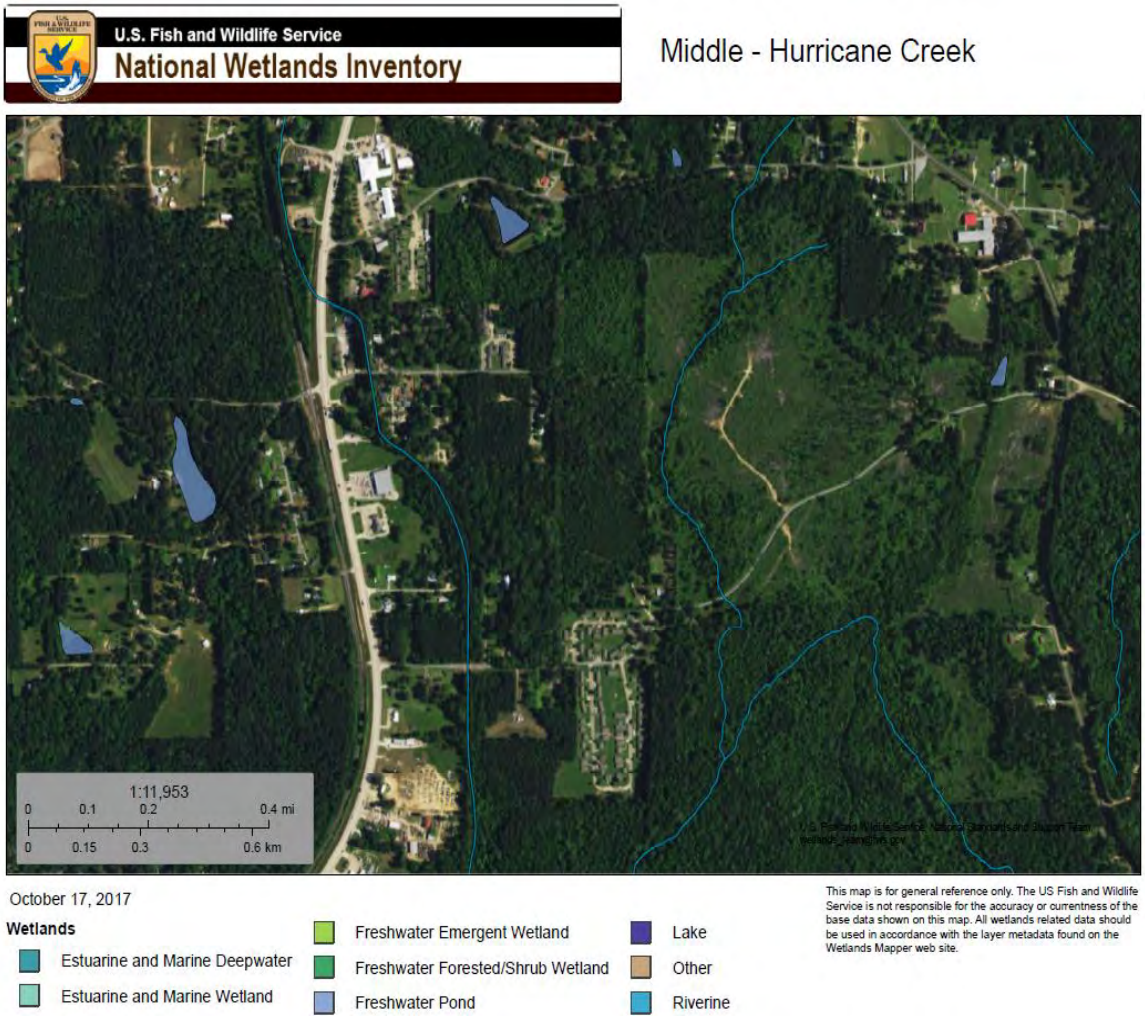

Figure 6. NWI Map of the Southern Portions of the Project Site (Northern Part of PA 2).

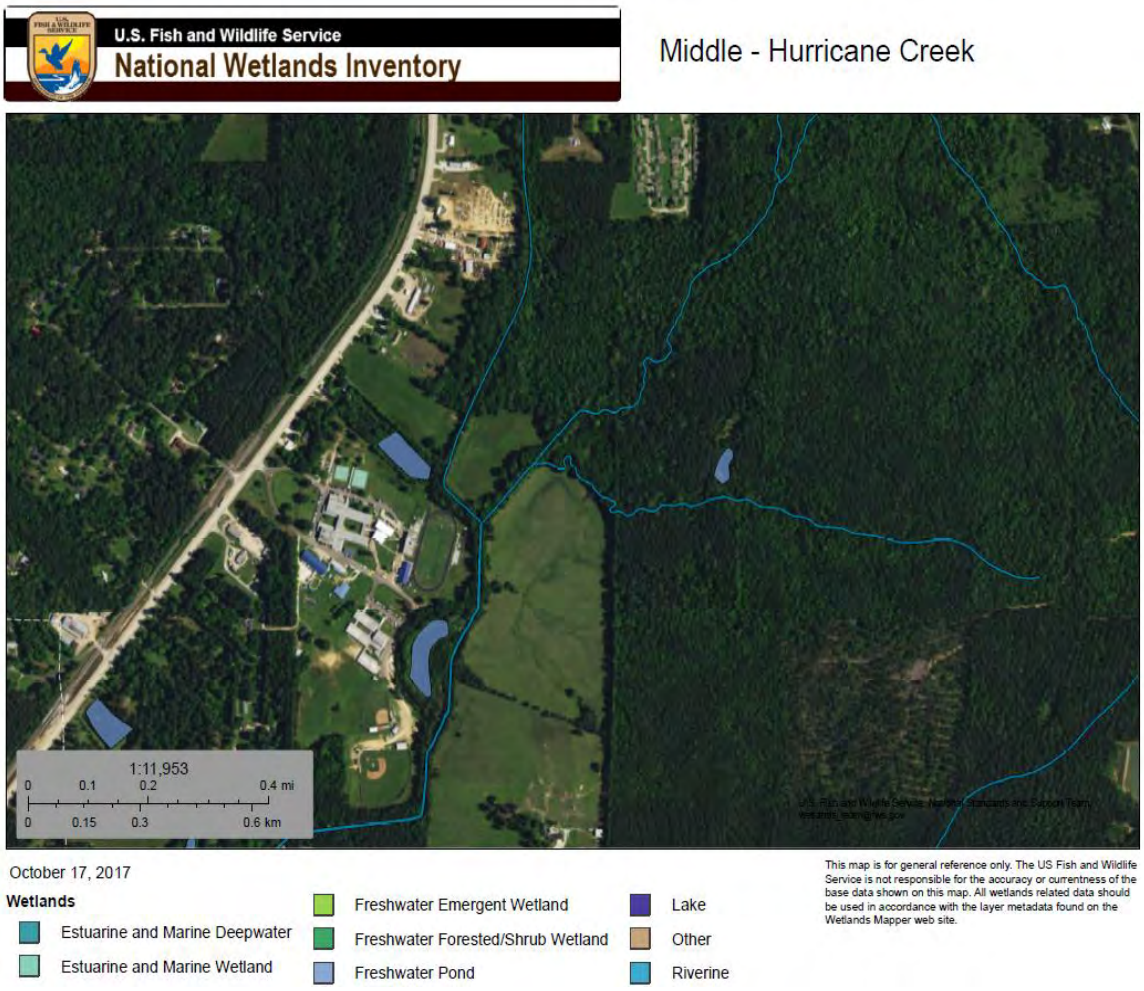

Figure 7. NWI Map of the Southern Portions of the Project Site (PA 3 and Middle Part of PA 2).

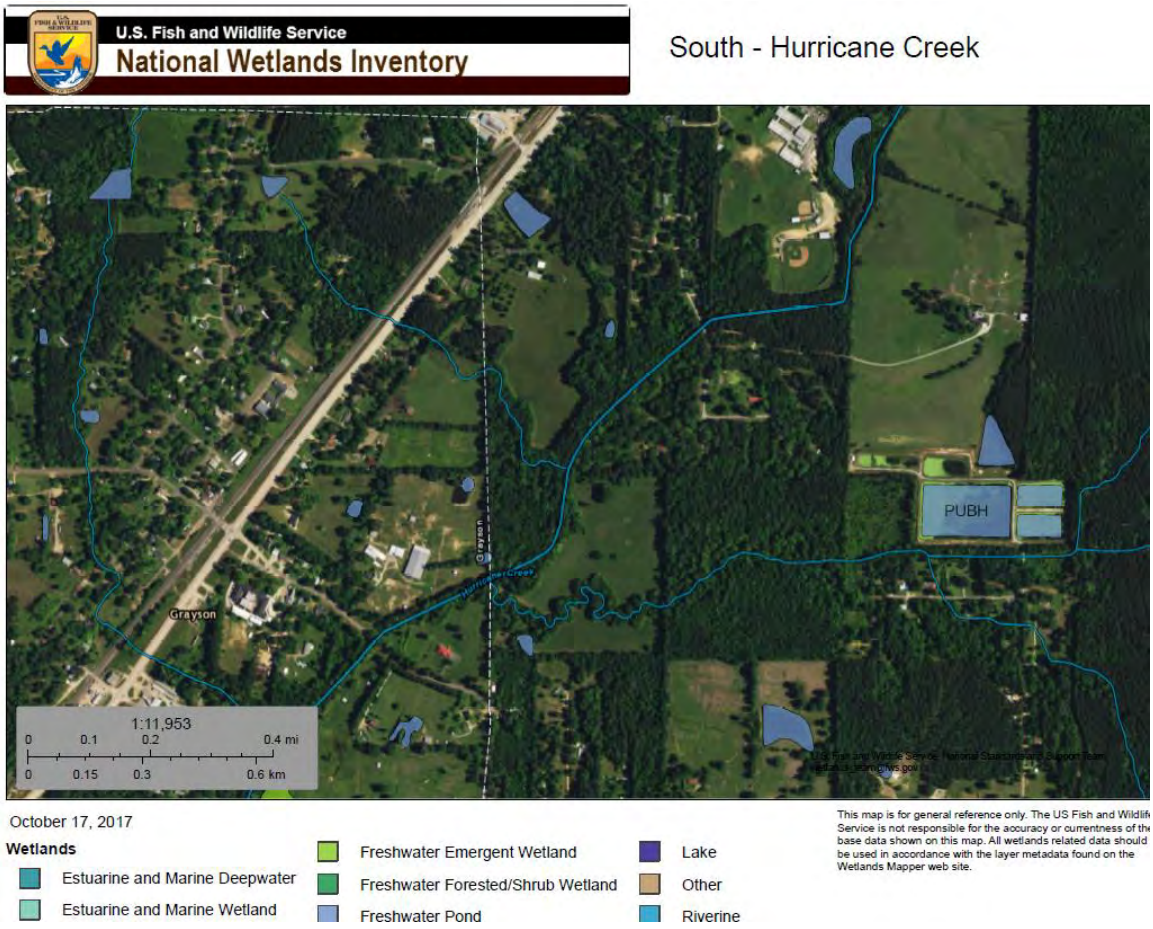

Figure 8. NWI Map of the Southern Portions of the Project Site (PA 4 and Southern Part of PA 2).

***No Action Alternative*:** Implementation of the No Action Alternative would entail no hazard mitigation measures or enhanced flood reduction at the project sites. This Alternative would not further impact wetlands or other waters of the U.S. and would not require any further CWA Section 404 permit.

***Preferred Action Alternative*:** For the Preferred Action Alternative, riverine wetlands exist along portions of Hurricane Creek, Caldwell High School Tributary, and Hanchey Rd. Tributary and work would occur in waters of the U.S. A SOV was prepared and submitted to the USACE, EPA, and LDEQ by the FEMA on February 12, 2016. LDEQ responded on February 29, 2016 that if any of the proposed work is located in wetlands or other areas subject to USACE jurisdiction, USACE should be contacted regarding permitting issues. Per the EPA response dated February 17, 2016, jurisdictional waters of the U.S. occur on the proposed sites and coordination with the USACE at the Vicksburg District Office is recommended. The USACE responded on September 14, 2016 that the areas involved are regulated pursuant to Section 404 of the CWA and that any work involving a discharge of dredged and/or fill material into the streams would require a Section 404 permit as well as any land clearing of any access roads in waters of the U.S. The USACE recommended that the Subrecipient apply for a permit for the proposed work, so a final determination of permit requirements on the proposed work area (34.5 ac.) including the channels and access roads needed to complete the work, could be made. It was recommended that the Subrecipient conduct a jurisdictional determination on the sites.

On November 7, 2017, the Subrecipient submitted a CWA Section 404 wetlands permit application, accompanied with the *Wetlands Delineation: Caldwell Parish Drainage* report (wetland report), dated November 7, 2017, by McManus Consulting Engineers, Inc., to the USACE. McManus Consulting Engineers, Inc. relied upon the *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*, issued by the USACE in 1987, to prepare the wetland report, which documents wetland delineation field activities completed in July 2016 (Appendix D Reports and Other Correspondence).

Per the wetland report, 13 observation points on the top bank or within 40 ft. from the top bank of the main channel, and four (4) observation points along the tributaries were sampled based on the proposed access road location for the improvements. The report identified jurisdictional wetland areas at two (2) locations in the proposed work areas: an area approximately 180 ft. south of Martin Luther St. between Martin Luther St. and Garsee Rd. and another wetland area along the Hanchey Rd. Tributary where Hurricane Creek crosses under Hanchey Rd.

A 330 ft. area from Station 511+30 to 514+60, south of Martin Luther St., would remain untouched to avoid work in an area of wetlands identified on the west side of the creek. This wetland area is a single, 190 ft. segment in PA 1 and is located approximately 200 ft. downstream (south) of the Martin Luther St. crossing over Hurricane Creek.

The second wetland area is located on the north side of Hanchey Rd. and on the west side (i.e., south bank) of the Hanchey Rd. Tributary to Hurricane Creek, immediately downstream (north) of the second Hanchey Rd. roadway crossing (Station 741+40) over the tributary. Improvements would be limited to 100 ft. of clearing to the west of the first crossing (Station 750+00), near the beginning of the tributary to avoid wetland areas. Construction of work areas and channel

improvements in PA 4 within the Hanchey Rd. Tributary would commence at the first Hanchey Rd. crossing beginning at Station 749+55 and stopping at Station 748+95.

In addition, the USACE supplied preliminary jurisdictional determination information, dated May 1, 2018, showing an area of wetlands along Hurricane Creek just south of LA Hwy. 849. This portion of the project is included in the Parish SOW which extends approximately 1,300 LF upstream from just north of Martin Luther St. (also north of PA 1). This portion was to extend to LA Hwy. 849; however, the Parish SOW would not be performed in the wetland area.

Based on the discovery of wetlands and coordination with the USACE, the Subrecipient submitted updated site plans to avoid improvements in the wetland areas and to accurately reflect the SOW as described in this draft EA. Implementation of the Preferred Action Alternative would require a Department of the Army permit under Section 404 of the CWA. A Department of the Army NWP 3 maintenance permit (ID No. MVN-2011-1213) was issued on October 19, 2018. Per the USACE documents, approximately 0.69 ac. of wetlands within the project site would be avoided and a mitigation credit purchase would not be required. The Subrecipient is not required to purchase compensatory mitigation for the unavoidable loss of wetlands and water of the U.S. at the project sites as the areas containing wetlands would be avoided. Protective measures would be implemented to restrict construction activities of the proposed project only to areas outside of these wetland areas. No work or materials storage associated with the proposed project would occur within these wetland areas. Stormwater pollution prevention measures would be used to keep erosion and sediment deposits from entering downstream areas. Excavated materials generated by the proposed project would be temporarily stored in an upland area, at a Caldwell Parish Department of Public Works facility located near the intersection of LA Hwy. 4 and LA Hwy. 850, approximately 0.75 mi. west of the proposed project location. Temporary and localized impacts to riverine wetlands are anticipated during construction; however, the wetlands would be restored to their original state. Supporting documentation is found in Appendix C Agency Correspondence and Appendix D Reports and Other Correspondence.

No significant impacts would occur to wetlands under the Preferred Action; however, indirect short-term impacts to the surrounding area could occur during construction. FEMA finds there is no practicable alternative to avoiding minor impacts to wetlands. The improvements are needed to control flooding. Construction BMPs would be included into the daily construction activities. See Section 6.0 Conditions and Mitigation Measures.

Any changes or modifications to the proposed project will require a revised wetland jurisdictional determination.

Off-site locations of activities such as borrow, disposals, haul-and detour-roads and work mobilization site developments may be subject to the Department of the Army regulatory requirements and may have an impact to a Department of Army project.

The project is in close proximity or directly adjacent to wetlands. Extreme care should be taken during the construction process through the appropriate use and maintenance of BMPs. ECDs such as silt fencing, hay bales, sediment traps, etc., must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby wetland areas, per CWA and E.O. 11990. Potential concerns include, but are not limited to silting-in and contamination from spills. Proper

signage is required to clearly identify the adjacent wetland boundaries to avoid potentially adverse impacts from construction vehicles/equipment/supplies that accidentally leave the boundaries of the approved ROW. Any adverse impacts to adjacent wetlands resulting from the construction of this project would jeopardize receipt of federal funding.

If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the USACE, the Subrecipient should contact the USACE directly regarding permitting issues. If a USACE permit is required, part of the application process may involve a water quality certification from LDEQ.

The Subrecipient shall ensure that BMPs are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the CWA and E.O. 11990.

The Subrecipient must comply with all the Special, General, and Regional Conditions listed in the required NWP 3 (MVK-2011-1213) issued on October 19, 2018, which will expire on March 18, 2022. The Subrecipient is required to coordinate with USACE for reinstatement of NWP 3. The Subrecipient must provide a signed certification of compliance stating that the authorized work was completed in accordance with the terms and conditions of the said permit including any required mitigation.

All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to GOHSEP and FEMA as part of the permanent project files.

***Considered Action Alternative*:** The Considered Action Alternative would be to straighten the drainage channel by removing the meandering of the natural flow of Hurricane Creek and widening the channel to make it a true canal for stormwater drainage. This project would require the purchase of new, wider ROWs as well as houses or other structures that currently flood and whose locations lie in close proximity to the creek. The proposed channel is approximately 11 mi. long. It is estimated that at least ten (10) homes would be purchased and removed, and 50 ft. of ROW purchased from approximately 21 landowners. This alternative would require property acquisitions that would be determined later. It is possible that additional culvert and bridge crossings would have to be installed in areas for access.

Impacts here would be similar to or more than those found in the Preferred Action Alternative. A wetland delineation would be required to assess any additional impacts to wetlands. Should this alternative project as proposed become the proposed project, coordination with the USACE and the EPA would be required by the FEMA and impacts would be reassessed based on the agency responses. The Subrecipient would need to submit a permit application to the USACE and take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.

4.4 Threatened and Endangered Species (ESA Section7)

The ESA of 1973 prohibits the taking of listed, threatened, and endangered species unless specifically authorized by permit from the USFWS or the NMFS. Under provisions of section 7(a)(2) of the ESA, a Federal agency that carries out, permits, licenses, funds, or otherwise authorizes activities that may affect a listed species must consult with the Fish and Wildlife Service to ensure that its actions are not likely to jeopardize the continued existence of any listed species.

Per the USFWS LA ESA online technical assistance tool review conducted on August 28, 2018, there is currently one (1) federally listed species under the ESA that occurs or potentially occurs in Caldwell Parish. Per Federal Register, USFWS presented a proposed rule for the AST on 11/9/21. See Table 7 below for more information.

Table 7. Federally Listed Species Known to Occur or Possibly Occur in Caldwell Parish

Common Name	Scientific Name	Federal Status	Critical Habitat in Caldwell Parish?	Habitat Requirements	Impact/ Rationale
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	No critical Northern Long-eared Bat habitat	This species can be found in mixed pine/hardwood forest with intermittent streams. It is found in much of the eastern and north central U.S. and the Canadian provinces from the Atlantic coast west to the southern Northwest Territories and eastern British Columbia. According to the USFWS, in LA there have been confirmed reports of sighting in Winn and Grant Parishes. This species can possibly be found in other parishes of the state. Some individuals were documented during mist net and bridge surveys on the Winn District of the Kisatchie National Forest and were also observed under bridges on the Winn District in Grant Parish.	NLAA. Conservation measures would be a condition of the grant.
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed	No critical Alligator Snapping Turtle habitat	AST can utilize a variety of waterbodies, preferring freshwater, but able to tolerate some salinity and brackish waters. The species is generally found in deeper water of large rivers and their	NLAA Conservation measures would be a condition of the grant.

Common Name	Scientific Name	Federal Status	Critical Habitat in Caldwell Parish?	Habitat Requirements	Impact/ Rationale
				major tributaries; however, it is also found in a wide variety of habitats, including small streams, bayous, canals, swamps, lakes, reservoirs, ponds, and oxbows (a lake that forms when a meander of a river is cut off). Most of the time the species are bottom-dwelling within the waterbodies it uses, but it surfaces periodically to breathe. Adult females nest on land in sandy soils or other dry substrate near freshwater sources that are within 8 to 656 feet (ft) (2.5 to 200 meters (m)) from the water's edge with a high percentage of riparian canopy cover. AST utilizes areas with more aquatic structures (e.g., tree root masses, stumps, submerged trees, etc.) than open water. Aside from the nest, all life stages rely on submerged material (i.e., deadhead logs and vegetation) for resting, foraging, and cover from predators. Woody debris, undercut banks, and large rocks found throughout the rivers provide important habitat during low water levels.	

***No Action Alternative*:** Implementation of the No Action Alternative would entail no hazard mitigation measures or enhanced flood reduction at the project site and, therefore, would have no impact on species federally listed as threatened or endangered or on federally-listed critical habitat.

***Preferred Action Alternative*:** The Northern Long-eared Bat (*Myotis septentrionalis*) is the single federally and/or state listed threatened/endangered species known to occur within Caldwell Parish. As directed by the USFWS, FEMA utilized the LA ESA online technical assistance tool on August 28, 2018 and submitted an SOV including the ESA Project Review and Guidance for Other Trust

Resources Report for both the north and south sections of the project to the USFWS on September 6, 2018. The project, as proposed, resulted in a "not likely to adversely affect" (NLAA) determination for the NLEB. The USFWS concurred with FEMA's NLAA determination on September 20, 2018. See Appendix C Agency Correspondence.

As part of the environmental review process, FEMA prepared and submitted a SOV to the LDWF on February 12, 2016. LDWF responded on February 17, 2016 that no impacts to rare, threatened, or endangered species or critical habitats within LA's boundary are anticipated for the proposed project. In addition, no state or federal parks, wildlife refuges or scenic streams are known at the specified site within LA's boundaries.

In addition, according to the USACE 404 Permit submitted on November 7, 2017, tree removal would be limited to only along the top proposed bank and would have the stumps preserved to help maintain the bank slope stability. All construction would be kept within the limits of disturbance line (Appendix B). All trees, woody growth and debris from the channel bottom, side-slopes, excavated limits, and to 5 ft. from the top bank would be removed. A minimum number of trees would be removed to facilitate equipment access from 5 ft. to 20 ft. on the top bank. Cypress trees or trees with greater than 18 in. in dia. would not be removed in the 5 ft. to 20 ft. limit unless absolutely necessary. Access in the 20 ft. to 40 ft. limit would be restricted and only used if necessary. During construction, the area would be subject to high levels of disturbance from dust, noise, and vibration from normal conditions.

Based on FEMA's consultations and analysis, FEMA has determined that the following USFWS conservation measures are required for the NLEB as a condition of the proposal and therefore, determined that the proposed project is NLAA for the NLEB and/or its habitat that may possibly occur in the area. These determinations were made based upon the following features: behavioral attributes and biological needs of each species, and existing habitat conditions within the action area. Implementation of the following conservation measures is a condition of federal funding. The Subrecipient must conduct activities outside of the NLEB active season (April 1 to October 31) in areas where NLEBs are known to roost.

Although there is the potential for the NLEB and/or its habitat to possibly occur in the project area, the conservation measures would ensure that the proposed project would Not Likely Adversely Affect this species. The NLAA determination is defined as effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Federal agency determines that the action is not likely to adversely affect listed species (e.g., the effects are beneficial, insignificant, or discountable), and the Service agrees with that determination, the Service provides concurrence in writing and no further consultation is required. As mentioned before, the USFWS concurred with FEMA's NLAA determination on September 20, 2018.

The Alligator Snapping Turtle (AST) (*Macrochelys temminckii*) is proposed to be listed as a threatened or endangered species under ESA. AST is known to occur within Caldwell Parish.

FEMA requested an informal conference with USFWS regarding potential impacts to the AST on April 13, 2022, USFWS responded on May 16, 2022 that they would review the documents provided; however, no further response has been received as of July 13, 2022.

November 9, 2021, USFWS published a proposed rule for the AST in the Federal Register. The proposal not only proposes to list the AST as threatened, but USFWS is also proposing the 4(d) rule for the conservation of the turtle, which would allow several exceptions to the prohibited activities. (See https://www.federalregister.gov/d/2021-23994 for full details on proposed rule and 4(d) exceptions). In addition, USFWS stated that no critical habitat is being proposed at this time.

Based on FEMA's analysis and review of USFWS proposed rule, and the regulations 50 CFR § 402.10 - Conference on proposed species or proposed critical habitat, FEMA has determined that the following conservation measures are required for the AST as a condition of the proposal and therefore, determined that the proposed project would not jeopardize the continued existence of the AST. Although, AST habitat that may possibly occur in the area, there is no proposed critical habitat identified for this species. These determinations were made based upon the following features: behavioral attributes and biological needs of each species, and existing habitat conditions within the action area. Implementation of the following conservation measures is a condition of federal funding.

- Monitors during AST Nesting period of April 30th – July 31st: occurs at muddy and/or sandy-silt banks near water's edge and consists of woody debris, undercut banks, aquatic structures (e.g., tree root masses, stumps, submerged trees, etc.) and a riparian canopy. Incubation period for alligator snapping turtle nests is approximately 98 to 130 days.

- No removal of vegetation, deadheads/snags, or woody debris from either banks or undercut banks due to species selects areas with more aquatic structures to support important feeding areas for AST hatchlings & juveniles (i.e., tree root masses, stumps, submerged trees, etc.). Deadhead logs and fallen riparian woody debris, where present, provide refugia during low-water periods and resting areas for all life stages.

- Because of AST proclivity for bottom-dwelling - no waterway obstructions (i.e., no channelization which may reduce water-flows). However, a buffer might be considered per USFWS recommendations/suggestions.

As mentioned above, although FEMA has determined the project would not likely jeopardize the continued existence of the proposed species or result in the destruction or adverse modification of proposed critical habitat, FEMA requested an informal conference with USFWS regarding potential impacts to the AST on April 13, 2022, USFWS responded on May 16, 2022 that they would review the documents provided; however, no further response has been received as of July 13, 2022.

No significant impacts would occur to threatened or endangered species under the Preferred Action; however, indirect short-term impacts to the surrounding area could occur during construction. Construction BMPs would be included into the daily construction activities. See Section 6.0 Conditions and Mitigation Measures.

To ensure continued ESA compliance, the Subrecipient must stop work and contact FEMA-EHP if 1) new information reveals that the action may affect listed species or designated critical habitat, 2) the action is modified in a manner that causes effects to listed species or designated critical habitat, or 3) a new species is listed or critical habitat designated. Additional consultation as a result of any of the above conditions or for changes not covered in the consultation should occur before changes are made and or finalized.

The Subrecipient must conduct activities outside of the NLEB active season (April 1 to October 31) in areas where NLEBs are known to roost.

Monitors during AST Nesting period of April 30th – July 31st: occurs at muddy and/or sandy-silt banks near water's edge and consists of woody debris, undercut banks, aquatic structures (e.g., tree root masses, stumps, submerged trees, etc.) and a riparian canopy. Incubation period for alligator snapping turtle nests is approximately 98 to 130 days.

No removal of vegetation, deadheads/snags, or woody debris from either banks or undercut banks due to species selects areas with more aquatic structures to support important feeding areas for AST hatchlings & juveniles (i.e., tree root masses, stumps, submerged trees, etc.). Deadhead logs and fallen riparian woody debris, where present, provide refugia during low-water periods and resting areas for all life stages.

Because of AST proclivity for bottom-dwelling - no waterway obstructions (i.e., no channelization which may reduce water-flows). However, a buffer might be considered per USFWS recommendations/suggestions.

***Considered Action Alternative*:** For the Considered Action Alternative additional tree removal would be required in order to remove the meandering of the natural flow of Hurricane Creek to straighten and widen the drainage channel. This would include the purchase of new, wider ROWs as well as houses or other structures that currently flood and whose locations lie in close proximity to the creek. It is possible that additional culvert and bridge crossings would have to be installed in areas for access. Impacts here would be similar to or more than those found in the Preferred Action Alternative. Should this alternative project as proposed become the proposed project, coordination with the LDWF and USFWS would be required by the FEMA and impacts would be reassessed based on the agency responses. Further impacts would be analyzed based on site plans.

5.0 CUMULATIVE IMPACTS

The CEQ regulations state that the cumulative impact of a project represents the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR § 1508.7).

In its comprehensive guidance on cumulative impacts analysis under NEPA, CEQ notes that "the range of actions that must be considered includes not only the project proposal, but all connected and similar actions that could contribute to cumulative effects" (Regulations for Implementing the Procedural Provisions of the NEPA 2005). The term, "similar actions," may be defined as

"reasonably foreseeable or proposed agency actions [having] similarities that provide a basis for evaluating the environmental consequences together, such as common timing or geography" (40 CFR § 1508.25[a][3]).

Because some effects may be irrelevant or inconsequential to decisions about the proposed action and alternatives, the focus of the cumulative effects' analysis should be narrowed to important issues of national, regional, or local significance. To assist agencies in this narrowing process, CEQ (2007) provides a list of several basic questions to be considered, including: (1) Is the proposed action one of several similar past, present, or future actions in the same geographic area?; (2) Do other activities (governmental or private) in the region have environmental effects similar to those of the proposed action?; (3) Have any recent or ongoing NEPA analyses of similar or nearby actions identified important adverse or beneficial cumulative effect issues?; and (4) Has the impact been historically significant, such that the importance of the resource is defined by past loss, past gain, or investments to restore resources?

It is normally insufficient when conducting a cumulative effect analysis (CEA) to merely analyze effects within the immediate area of the proposed action. Geographic boundaries should be expanded for cumulative effects analysis and conducted on the scale of human communities, landscapes, watersheds, or airsheds. Temporal frames should be extended to encompass additional effects on the resources, ecosystems, and human communities of concern. A useful concept in determining appropriate geographic boundaries for a CEA is the project impact zone, that is, the area (and resources within that area) that could be affected by the proposed action. The area appropriate for cumulative effects will, in most instances, be a larger geographic area occupied by resources outside of the project impact zone (CEQ 2007).

The resource categories described in Sections 4.3 and 4.4 that have the potential for minor environmental effects are Wetlands and Waters of the U.S and Threatened and Endangered Species. Section 4.2 Hydrology and Floodplains (E.O. 11988) describes the potential for moderate environmental effects.

The proposed project site is centered at Latitude 32.060641, Longitude -92.094087 in zip code 71418. FEMA has determined that the subwatershed, Hurricane Creek (Hydrologic Unit Code (HUC) 080403020202), which is approximately 18,866 ac. in area, constitutes an appropriate boundary for a cumulative impact analysis of the Preferred Action, Considered Action, and the No Action Alternatives.

Past, present, and reasonably foreseeable future actions for the project area are discussed further in this section to determine the potential for these environmental resources to be affected in a cumulative significant manner.

According to the LDOTD online map of state-funded transportation projects, the following projects are located within a 1 mi. radius of the proposed project. The LDOTD online map of state-funded transportation projects planned for fiscal year 2019-2020 is found online at this website, https://ladotd.maps.arcgis.com/home/webmap/viewer.html?webmap=d48f2bdc5ae14c5a90cd3eaf9f82acd0

- District 58 Asphaltic Surface Treatment (AST) Projects (2012-2017): Approximately 2.26 mi. of this roadway AST project along the LA Hwy. 4 ROW lie within a 1 mi. radius of the proposed project.

- LA 849 Patch and Overlay (2012-2017): Approximately 1.6 mi. of this roadway patch and overlay project along the LA Hwy. 849 ROW lies within a 1 mi. radius of the proposed project.

- LA Hwys 844 and 850 Patch and Overlay (2012-2017): This 1.88 mi. roadway patch and overlay project along the LA Hwy. 850 ROW lies entirely within a 1 mi. radius of the proposed project.

- LA Hwys 858, 859, 856, 774, 566, 850 AST: Approximately 0.95 mi. of this roadway chip seal project along the LA Hwy. 850 ROW lie within a 1 mi. radius of the proposed project.

- LA Hwy. 4: Banks Springs – Junction US 165: This 1.71 mi. roadway widening and overlay, with curve realignment, project along the LA Hwy. 4 ROW lies entirely within a 1 mi. radius of the proposed project.

- LA Hwy. 126: Union Pacific Railroad Crossing (Grayson) (2012-2017): This railroad crossing signal preemption project on the LA Hwy. 126 ROW lies within a 1 mi. radius of the proposed project.

A search of the USDA NRCS projects listed on the following website, https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/wfpo/?cid=nrcseprd1356244, identified one LA project in Grant Parish, over 20 mi. downstream of the location of the proposed project.

According to the U.S. Department of Transportation (U.S. DOT) online map of federally funded transportation projects from 2009-2021, one (1) federally funded transportation project is located across the Mississippi River in Natchez, MS, over 20 mi. from the proposed project area. The U.S. DOT online map of federally-funded transportation projects from 2009-2022 is found online at this website, https://www.transportation.gov/policy-initiatives/build/awards-2009-2020.

FEMA-EHP also assessed the potential for the following previously funded FEMA projects in Caldwell Parish to effect resources, and has determined that they would not have effects within the stated regions of influence (ROIs) for the resources undergoing CEA:

- Building Projects
  - Caldwell Parish Community Center
  - Pineville Recreation Center
  - Building and Equipment, 185 Sparta Dr.
  - Electric Control Panel, 185 Sparta Dr.
  - Grayson Elementary School
- Roadway Projects
  - Parish-Wide
  - City-Wide (Columbia, LA)
  - Old Alexandria Rd.

  - Bellview Ln.
- Utility Projects
  - Sewage Lift Station 7
  - Village of Grayson Emergency Protective Measures

The locations registered for the projects referenced above are shown on Figure 9, along with the proposed project area and a 1 mi. buffer around the project area. No significant cumulative impacts are anticipated from the projects listed above. FEMA has identified no other projects that, when added to the proposed project, would be expected to have a cumulative impact on the human and natural environment. FEMA-EHP is not aware of any other proposed projects near the proposed project impact area that have the potential to effect environmental resources of the project corridor and result in potential significant cumulative impacts when combined with any impacts from the proposed project.

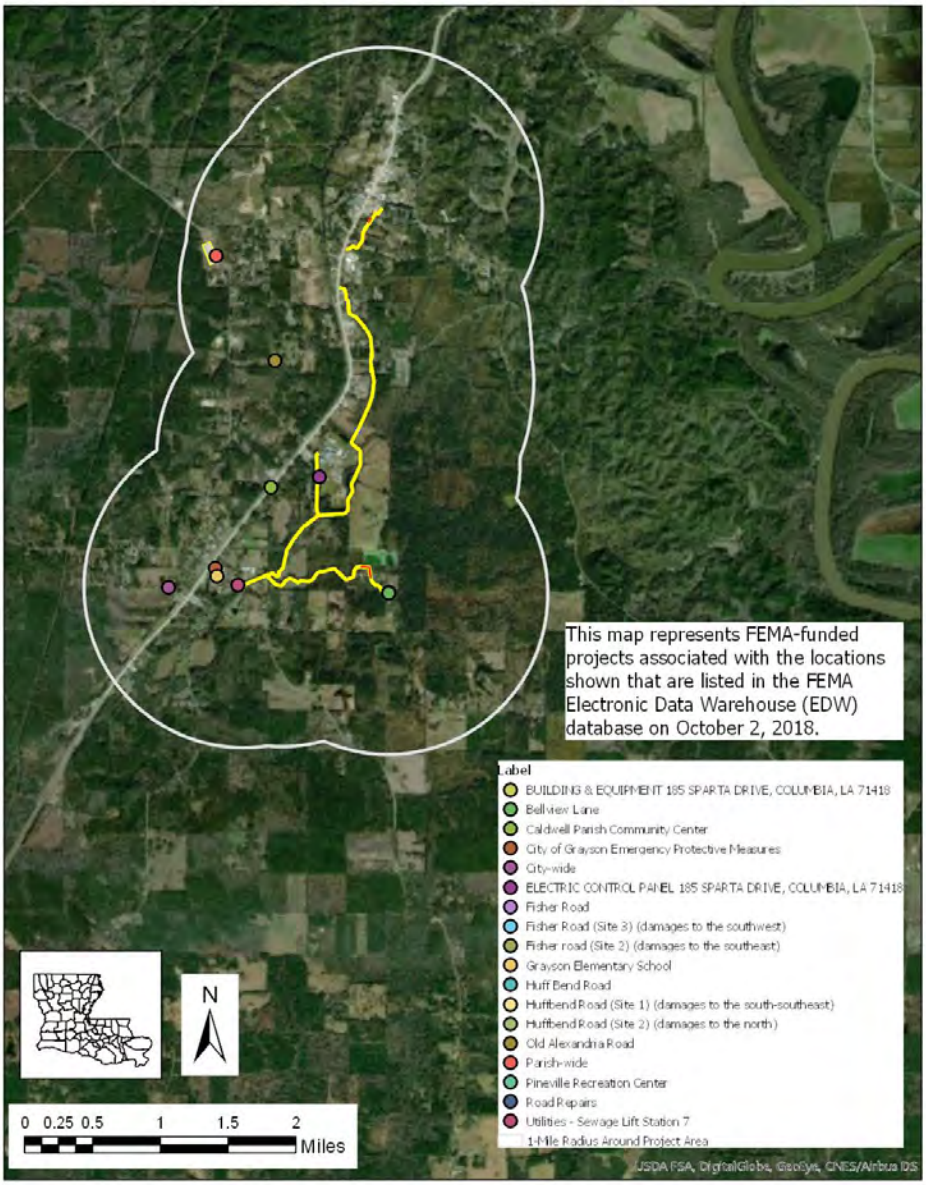

Figure 9. One-Mile Buffer Area Map depicting FEMA-funded projects within the study area.

The USACE, Regulatory program, regulates work and structures that are located in, under or over navigable waters of the U.S. under Section 10 of the RHA of 1899, the discharge of dredged or fill material into waters of the U.S. under Section 404 of the CWA, and the transportation of dredged material for the purpose of disposal in the ocean (regulated by the USACE under Section 103 of the Marine Protection, Research and Sanctuaries Act). "Waters of the U.S." are navigable waters, tributaries to navigable waters, wetlands adjacent to those waters, and/or isolated wetlands that have a demonstrated interstate commerce connection. According to the USACE Permit Finder https://permits.ops.usace.army.mil/orm-public accessed July 2021, there are three (3) Approved Jurisdictional Determinations (AJD) identified in the subwatershed. Project details are displayed in Table 8. These projects would be subjected to various levels of environmental review as dictated by the USACE permitting process and would be conditioned with appropriate conservation

measures by virtue of any necessary special, general, and regional conditions of the USACE permit. No significant cumulative impacts are anticipated from these projects.

Table 8. USACE Permitted Projects in the Subwatershed

Permit Number/ Title	Location	Description
USACE Permit MVK-2017-00316-TB Town of Clarks Caldwell Parish, LA AJD May 3, 2017	Hurricane Creek subwatershed	Dry Land AJD; LA Community Development Block Grant (LCDBG) Public Facilities-Proposing to Reconstruct Existing Streets. The project site is a total of 11 upland (existing street surfaces) sites. This project is located approximately 2.5 mi from PA 2 and PA 4.
USACE Permit MVK-2019-00089-TB Caldwell Parish Sheriff's Department Village of Grayson Caldwell Parish, LA AJD February 15, 2019	Hurricane Creek subwatershed	Dry Land AJD; Request for a wetland determination on the Caldwell Parish Rifle Range. Review indicated that there were no hydric soils, or other waters located within the proposed project area. This project is located approximately 2 mi. from PA 2 and 4.
USACE Permit MVK-2021-00289-TB Tillman Infrastructure Town of Columbia Caldwell Parish, LA AJD April 12, 2021	Hurricane Creek subwatershed	AJD for Navigable Waters Protection Rule; Request for a Jurisdictional Determination on the proposed tower location. Review indicated 0.1 ac. of a non-adjacent wetland on the site. This project is located approximately 0.5 mi. from PA 1.

The cumulative effect of these present, past, and reasonably foreseeable future actions is not anticipated to result in a significant impact to any resource. In conclusion, FEMA has determined that the incremental effects of the other infrastructure recovery and improvement actions are likely to be similar to the proposed project's impacts and effects previously described within this EA. The effects to socioeconomic resources are expected to be beneficial, and effects to other resources expected to be either non-existent or minimal and temporary. FEMA has further determined that the incremental impact of the present proposed project, when combined with the effects of other past, present, and reasonably foreseeable future projects, is neither cumulatively considerable nor significant.

FEMA-EHP is not aware of any other proposed projects near the proposed project impact area that have the potential to effect environmental resources of the project corridor and result in potential significant cumulative impacts when combined with the impacts from the proposed project.

6.0 CONDITIONS AND MITIGATION MEASURES

Based upon the studies and consultations undertaken in this EA, several conditions and mitigation measures must be taken by the Subrecipient prior to and during project implementation. The following conditions must be met as part of the implementation of the project. Failure to comply with these conditions may jeopardize federal funds. The Subrecipient is required to comply with all federal, state, and local laws, E.O.s, and regulations.

- The Subrecipient is required to obtain and comply with all local, state, and federal permits, approvals, and requirements prior to initiating work on this project. All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to correspondence to the GOHSEP and FEMA as part of the permanent project files. Should the site plans (including drainage design) change, the Subrecipient must submit those changes to FEMA-EHP for review and approval prior to the start of construction.

- Implement construction stormwater BMPs; install silt fences/straw bales to reduce sedimentation. Area soils would be covered and/or wetted during construction. If fill is stored on site, the contractor would be required to appropriately cover it.

- The Subrecipient is required to coordinate with the local floodplain administrator, obtain required permits prior to initiating work, and comply with any conditions of the permit to ensure harm to and from the floodplain is minimized.

- Per 44 CFR 9.11(d), mitigation or minimization standards must be applied, where possible.

- Per 44 CFR 9.11(d)(4), there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the WSE of the base flood more than 1 ft. at any point within the community.

- Per 44 CFR 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the National Flood Insurance Program (NFIP).

- Should the site plans (including drainage design) change, the Subrecipient must submit changes to FEMA-EHP for review and approval prior to the start of construction.

- New construction must be compliant with current codes and standards. All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to GOHSEP and FEMA as part of the permanent project files.

- Any changes or modifications to the proposed project will require a revised wetland jurisdictional determination.

- Off-site locations of activities such as borrow, disposals, haul-and detour-roads and work mobilization site developments may be subject to the Department of the Army regulatory requirements and may have an impact to a Department of Army project.

- The project is in close proximity or directly adjacent to wetlands. Extreme care should be taken during the construction process through the appropriate use and maintenance of BMPs. Erosion Control Devices (ECDs) such as silt fencing, hay bales, sediment traps, etc., must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby wetland areas, per Clean Water Act (CWA) and EO 11990. Potential concerns include but are not limited to silting-in and contamination from spills. Proper signage is required to clearly identify the adjacent wetland boundaries to avoid potentially adverse impacts from construction vehicles/equipment/supplies that accidentally leave the boundaries of the approved ROW. Any adverse impacts to adjacent wetlands resulting from the construction of this project would jeopardize receipt of federal funding.

- If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), the Subrecipient should contact the USACE directly regarding permitting issues. If a USACE permit is required, part of the application process may involve a water quality certification from LDEQ.

- The Subrecipient shall ensure that BMPs are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the CWA and E.O. 11990.

- The Subrecipient must comply with all the Special, General, and Regional Conditions listed in the required USACE Permit (MVK-2011-1213) authorized under Nationwide Permit 3 (NWP 3) issued on October 19, 2018, which will expire on March 18, 2022, and the State of Louisiana NWP Regional Conditions (February 2017). The Subrecipient must coordinate with USACE for reinstatement of NWP 3. The Subrecipient must provide a signed certification of compliance stating that the authorized work was completed in accordance with the terms and conditions of the said permit including any required mitigation.

- All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to GOHSEP and FEMA as part of the permanent project files.

- Erosion Control Devices (ECDs) such as silt fencing, hay bales, sediment traps, etc. must be used and maintained extensively to prevent any potential direct or indirect adverse impacts to nearby waterways.

- If the project results in a discharge to waters of the State, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary. All precautions

should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas greater than or equal to one (1) acre. The Subrecipient must contact the LDEQ Water Permits Division at (225) 219-9371 to determine if the proposed project requires a permit. If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting additional wastewater.

- If the project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application of Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information: (http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx) or by contacting the LDEQ Water Permits Division at (225) 219-9371.

- Water softeners generate wastewaters that may require special limitations depending on local water quality considerations. If water system improvements include water softeners, contact LDEQ Water Permits to determine if special water quality-based limitations will be necessary.

- All precautions should be observed to protect the groundwater of the region. BMPs should be implemented to ensure groundwater is protected.

- If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents.

- Vehicle operation times would be kept to a minimum. Area soils must be covered and/or wetted during construction to minimize dust (i.e., particulate air emissions).

- To reduce potential short-term effects to air quality from construction-related activities, the contractor would be responsible for using BMPs to reduce fugitive dust generation and diesel emissions. Emissions from the burning of fuel by internal combustion engines would temporarily increase the levels of some of the criteria pollutants, including carbon dioxide (CO_2), nitrogen dioxide (NO_2), Ozone (O_3), and particulate matter less than 10 microns in diameter (PM_{10}), and non-criteria pollutants such as Volatile Organic Compounds (VOCs). To reduce these emissions, running times for fuel-burning equipment should be kept to a minimum and engines should be properly maintained.

- If at any time Heritage tracked species are encountered within the project area, please contact the Louisiana Natural Heritage Program (LNHP), now known as the Louisiana Department of Wildlife and Fisheries (LDWF) Wildlife Diversity Program (WDP), Data Manager at 225-765-2643.

- The Subrecipient must comply with the State of Louisiana NWP Regional Conditions (February 2017), Regional Condition 9, Supplement to General Condition 2 - Aquatic Life Movement. To support compliance with General Condition 2 of the NWPs, culverts must

be sufficiently sized to maintain expected high-water flows and be installed at a sufficient depth to maintain low flows to sustain the movement of aquatic species.

- To ensure continued ESA compliance, the Subrecipient must stop work and contact FEMA-EHP if 1) new information reveals that the action may affect listed species or designated critical habitat, 2) the action is modified in a manner that causes effects to listed species or designated critical habitat, or 3) a new species is listed or critical habitat designated. Additional consultation as a result of any of the above conditions or for changes not covered in the consultation should occur before changes are made and or finalized.

- The Subrecipient must conduct activities outside of the Northern Long-eared Bat (NLEB) active season (April 1 to October 31) in areas where NLEBs are known to roost.

- Monitors during AST Nesting period of April 30th – July 31st: occurs at muddy and/or sandy-silt banks near water's edge and consists of woody debris, undercut banks, aquatic structures (e.g., tree root masses, stumps, submerged trees, etc.) and a riparian canopy. Incubation period for alligator snapping turtle nests is approximately 98 to 130 days.

- No removal of vegetation, deadheads/snags, or woody debris from either banks or undercut banks due to species selects areas with more aquatic structures to support important feeding areas for AST hatchlings & juveniles (i.e., tree root masses, stumps, submerged trees, etc.). Deadhead logs and fallen riparian woody debris, where present, provide refugia during low-water periods and resting areas for all life stages.

- Because of AST proclivity for bottom-dwelling - no waterway obstructions (i.e., no channelization which may reduce water-flows). However, a buffer might be considered per U.S. Fish and Wildlife Service (USFWS) recommendations/suggestions

- During the project impact analysis process developers should identify project-related impacts to migratory birds and the conservation measures that will be used to mitigate them. For additional Migratory Bird Conservation recommendations, guidance and tools to help reduce impacts to birds and their habitats please visit the Louisiana Ecological Services Office (LESO) webpage: https://www.fws.gov/southeast/lafayette/migratory-birds/ and the Service's Migratory Bird Program Webpage (https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php).

- The Subrecipient must review the National Bald Eagle Management (NBEM) Guidelines is available at: http://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the Bald and Golden Eagle Protection Act (BGEPA).

- If a bald eagle nest occurs or is discovered within 660 ft. of the proposed project area, then USFWS requires an evaluation to be performed to determine whether the project is likely to disturb nesting bald eagles. The Subrecipient is required to conduct the evaluation on-line at: https://www.fws.gov/southeast/our-services/eagle-technical-assistance. Following completion of the evaluation, that website will provide a determination of whether

additional consultation is necessary. All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to correspondence to GOHSEP and FEMA as part of the permanent project files.

- Projects proposed in areas of the state that are inhabited by Black Bears should be designed to avoid adversely affecting this subspecies or its habitat. (A current Louisiana black bear breeding area map is located at: https://www.fws.gov/Lafayette/pdf/LA_Black_Bear_Breeding_Habitat_Map.pdf). For additional information regarding the Louisiana black bear and project-specific conservation measures that may be required by the LDWF, please contact Maria Davidson (Large Carnivore Program Manager) at (337) 262-2080 or mdavidson@wlf.la.gov.

    - Conservation measures for the Louisiana black bear include 1) reducing the footprint of proposed actions to the maximum extent feasible, 2) avoiding impacts to potential den trees that are 36 in. or more in diameter at breast height implementing programs to prevent the habituation of bears to human-associated food sources (e.g., use of "bear-proof" waste disposal containers or daily removal of food and garbage), and 3) avoiding vegetative clearing during the black bear denning season (i.e., December 1 through April 30).

- The U.S. Fish and Wildlife Service (USFWS) recommends that a qualified biologist inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season because some waterbird colonies may change locations year-to-year. To minimize disturbance to colonial nesting birds please refer to the colonial nesting waterbird guidance on the LESO webpage https://www.fws.gov/southeast/pdf/guidelines/colonial-water-birds-and-wading-birds-louisiana.pdf).

- Louisiana Unmarked Human Burial Sites Preservation Act: If human bone or unmarked grave(s) are present within the project area, compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (Revised Statue [RS] 8:671, et seq.) is required. The Subrecipient shall notify the law enforcement agency of the jurisdiction where the remains are located within 24 hours of the discovery. The Subrecipient shall also notify FEMA and the Louisiana Division of Archaeology (LDOA) at 225-342-8170 within 72 hours of the discovery.

- Inadvertent Discovery Clause: If during the course of work, archaeological artifacts (prehistoric or historic) are discovered, the Subrecipient shall stop work in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. The Subrecipient shall inform their GOSHEP State Applicant Liaison and Hazard Mitigation Assistance contacts at FEMA, who will in turn contact FEMA Historic Preservation (HP) staff. The Subrecipient will not proceed with work until FEMA HP completes consultation with the SHPO, and others as appropriate.

- All borrow or fill material must come from pre-existing stockpiles, material reclaimed from maintained roadside ditches (provided the designed width or depth of the ditch is not increased), or commercially procured material from a source existing prior to the event. For any FEMA-funded project requiring the use of a non-commercial source or a commercial source that was not permitted to operate prior to the event (e.g. a new pit,

agricultural fields, road ROWs, etc.) in whole or in part, regardless of cost, the Subrecipient must notify FEMA and the Recipient prior to extracting material. FEMA must review the source for compliance with all applicable federal environmental planning and historic preservation laws and executive orders prior to a Subrecipient or their contractor commencing borrow extraction. Consultation and regulatory permitting may be required. Non-compliance with this requirement may jeopardize receipt of federal funding. Documentation of borrow sources utilized is required at closeout.

- The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.

- Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project, the Subrecipient shall handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies.

- All debris would be disposed of at a permitted landfill.

- Mitigation and abatement measures will be required to reduce the noise levels to a range that would be considered acceptable. The Subrecipient must comply with any applicable local noise ordinances.

- The contractor must place fencing around the work area perimeters to protect nearby residents from vehicular traffic.

- To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in Occupational Safety and Health (OSHA) regulations and the USACE safety manual.

- The contractor must post appropriate signage and fencing to minimize potential adverse public safety concerns.

- Appropriate signage and barriers should be in place, as appropriate, prior to construction activities to alert pedestrians, motorists, and nearby residents of project activities and to protect them from traffic pattern changes.

- The contractor should implement traffic control measures, as necessary.

- The Subrecipient is required to protect existing individual trees through project design and implementation. If tree removal is unavoidable, the Subrecipient is required to plant two new trees for every one removed.

- The construction contractor shall comply with CERCLA hazardous substance release reporting requirements if an applicable release should occur.

- If an oil discharge to water occurs, the construction contractor must notify the National Response Center (NRC) at 800-424-8802.

- Any renovation or remodeling must comply with Louisiana Administrative Code (LAC) 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

- If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management, and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

- The Louisiana Department of Natural Resources (LDNR) Office of Conservation should be contacted at 225-342-5540 if any unregistered wells of any type are encountered during construction work.

- Louisiana One Call should be contacted at 800-272-3020 at least 48 hours prior to commencing any subsurface operations.

Failure to comply with these conditions may make part or all these projects ineligible for FEMA funding.

7.0 PUBLIC INVOLVEMENT

A public notice is published in *The Shreveport Times* for five (5) days, Monday, August 15, 2022, through Friday, August 19, 2022, and the journal of record, the *Caldwell Watchman* for three (3) days on Wednesdays, August 17, 2022, August 24, 2022, and August 31, 2022, to notify the public that the draft EA and FONSI were available for review at the Caldwell Parish Library at 211 Jackson St., Columbia, LA, Mondays through Fridays 8:00am to 5:00pm, and Saturdays 8:30am to 12:00pm. The draft EA was also published on FEMA's website at http://www.fema.gov/resource-document-library. There was a 30-day comment period beginning on August 8, 2022, and concluding on September 5, 2022, at 4 p.m. A copy of the Public Notice is attached in Appendix E. Once the public comment period for the draft EA is completed, comments will be addressed and incorporated into the final EA.

8.0 AGENCY COORDINATION

- Louisiana Department of Environmental Quality (LDEQ)
- Louisiana Department of Natural Resources (LDNR)
- Louisiana Department of Wildlife and Fisheries (LDWF)
- Louisiana State Historic Preservation Officer (SHPO)
- U.S. Army Corps of Engineers (USACE)
- U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS)

- U.S. Environmental Protection Agency (EPA)
- U.S. Fish and Wildlife Service (USFWS)

9.0 CONCLUSION

Although the Considered Action Alternative would result in a decrease in flooding, the implementation of the Considered Action Alternative was not a viable option based on the logistics and significant increase in the project cost. The involved route would traverse through private property necessitating the purchase and removal of required homes and other structures whose locations lie in close proximity to the 11 mi. long creek as well as the purchase of new, wider ROWs affecting approximately 50 landowners. Given the density of the existing structures and the limited land availability, rerouting the channel would directly affect a number of homes and require extensive surface development, replacement and addition of pipes, numerous servitudes, and acquisitions in a populated area when compared to the Preferred Action Alternative. Due to the additional complexity of construction, the logistics to acquire properties and reconfigure the creek channel, and the cost versus benefit of the project when compared to the Preferred Action Alternative this alternative was dismissed.

Construction of the Preferred Action Alternative was analyzed based on the studies, consultations, and reviews undertaken as reported in this EA. The findings of this EA conclude that the Preferred Action Alternative would result in no significant adverse impacts to geology and soils, water resources (surface water and water quality, groundwater, and wetlands), hydrology and floodplains, coastal resources, air quality, biological resources (vegetation and wildlife, Federally-listed threatened or endangered species and critical habitats), cultural resources, environmental justice and socioeconomic resources, traffic and transportation, public safety and access, resource conservation and recovery, noise, hazardous materials and toxic waste under the Preferred Action Alternative. Furthermore, this EA concludes that the Preferred Action Alternative would not result in cumulative impacts on the affected environment.

During project construction, short-term impacts to soils, surface water, transportation, air quality, and noise are anticipated, and conditions have been incorporated to mitigate and minimize the effects. Short-term impacts as a result of the proposed project would be mitigated using BMPs, such as silt fences, proper vehicle and equipment maintenance, and appropriate signage. No long-term adverse impacts are anticipated from the proposed project. Therefore, FEMA presently finds the Preferred Action meets the requirements for a FONSI under the NEPA, and the preparation of an EIS will not be required (Appendix E). If new information is received that indicates there may be significant adverse effects, FEMA would then revise the findings and issue a second public notice, for additional comments. However, if there are no significant comments, new information, or design changes, this draft EA will become the final EA.

Based upon the studies and consultations undertaken in this EA, and given the precautionary and mitigating measures, there does not appear to be any significant environmental impacts associated with the Hurricane Creek, Caldwell High School Tributary, and Hanchey Road Tributary Drainage Improvements Project.

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